

ENVIRONMENTAL ASSESSMENT BOARD



ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

VOLUME: 156

DATE: Wednesday, June 3, 1992

BEFORE:

HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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ENVIRONMENTAL ASSESSMENT BOARD
ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARING

IN THE MATTER OF the Environmental Assessment Act,
R.S.O. 1980, c. 140, as amended, and Regulations
thereunder;

AND IN THE MATTER OF an undertaking by Ontario Hydro
consisting of a program in respect of activities
associated with meeting future electricity
requirements in Ontario.

Held on the 5th Floor, 2200
Yonge Street, Toronto, Ontario,
Wednesday, the 3rd day of June,
1992, commencing at 10:00 a.m.


VOLUME 156

B E F O R E :

THE HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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701	Paper entitled: The Relationship of Economics in the Environment, by Al Holt.	27593
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684.21	Ontario Hydro undertakes to provide whether there has been a determination that Ontario Hydro will take all under 5 megawatt projects and all hydraulic NUGs regardless of size.	27671
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1 ---Upon commencing at 10:03 a.m.

2 THE REGISTRAR: Please come to order.

3 This hearing is now in session. Be seated, please.

4 THE CHAIRMAN: I wish to put on the
5 record Exhibit No. 700 which is filed on behalf of the
6 Board. It's a paper entitled: Avoided Cost Issues,
7 Theory and Applications, dated May 13th, 1992 by Paul
8 Halpern.

9 I think copies are available for those
10 who might wish it.

11 ---EXHIBIT NO. 700: Paper entitled: Avoided Cost
12 Issues, Theory and Applications, dated
May 13th, 1992 by Paul Halpern.

13 Mr. Shepherd.

14 MR. SHEPHERD: Thank you, Mr. Chairman.

15 As you can see my handlers have left me
16 totally unprotected this morning. I don't think that's
17 a comment on how it went yesterday.

18 Mr. Chairman, I'm filing an exhibit which
19 copies have been provided to the Board and to the
20 witnesses and to Ontario Hydro, it is entitled: The
21 Relationship of Economics in the Environment, it is a
22 paper by Al Holt.

23 I wonder if I can get a number for that.

24 THE REGISTRAR: That will be No. 701, Mr.
25 Chairman.

1 ---EXHIBIT NO. 701: Paper entitled: The Relationship
2 of Economics in the Environment, by Al
 Holt.

3 AMIR SHALABY,
4 JOHN KENNETH SNELSON,
5 JANE BERNICE TENNYSON,
6 FREDERICK GEORGE LONG,
7 BRIAN PAUL WILLIAM DALZIEL,
8 HELEN ANNE HOWES; Resumed.

9 CROSS-EXAMINATION BY MR. SHEPHERD (Cont'd):

10 Q. Mr. Snelson, you have had the chance
11 to briefly glance at this to identify the document?

12 MR. SNELSON: A. Briefly to the point
13 that it was put in front of me five minutes ago.

14 Q. Yes. Can you identify the document?

15 A. I can read the title page. I'm not
16 familiar with the document, I haven't seen it before.

17 Q. You can identify Al Holt?

18 A. Mr. Holt is the president of Ontario
19 Hydro.

20 Q. Now, yesterday we had a discussion
21 about your relative priorities within your five basic
22 thrusts think they are called, and I guess there was
23 some discussion and perhaps confusion, certainly shock
24 outside of the hearing room, at the notion that demand
25 management was not your top or No. 1 priority.

 Did I misunderstand that yesterday?

 A. I think that we indicated it was a

1 very high priority.

2 Q. Now, could you turn to the last page
3 of Mr. Holt's speech, please. The speech is entitled:
4 The Relationship of Economics in the Environment, and
5 in this last page your president is talking about the
6 Demand/Supply Plan. And you see the heading Principal
7 Strategies, and you see there's four subheadings, in
8 fact, which I take it track the first four of your five
9 basic thrusts; is that fair?

10 A. I see the headings. I haven't read
11 the paper. I see power purchase. I haven't read what
12 follows to know whether it's relating to power purchase
13 from non-utility generators or power purchase from
14 outside the province.

15 Q. Okay. All right. We will get to it.
16 The first one, the heading is Efficiency and
17 Conservation. Mr. Holt says:

18 "So the first and most important
19 initiative of our plan is to spend
20 \$3 billion on energy conservation
21 programs in the next decade."

22 I understand that's now \$6 billion;
23 right?

24 MR. SHALABY: A. I indicated there were
25 many estimates floating around and 6 billion was

1 mentioned by Panel 4, yes.

2 Q. Okay. Now, where Mr. Holt says that
3 this energy conservation program over the next decade
4 is the most important initiative of your plan, do I
5 take it that that has to be understood in the context
6 that the existing system really doesn't operate on the
7 same set of priorities as you described yesterday?

8 MR. SNELSON: A. I think that we
9 indicated yesterday that we expected to continue with
10 our demand management program, even if that meant
11 mothballing some of the existing facilities.

12 Q. Okay. All right. I am going to come
13 back to that later. So the impression we get -- sorry,
14 let me just ask one more question about that.

15 The impression we get from this, and just
16 accept for the purposes of argument for now that the
17 impression this leaves is, you have got demand
18 management, that is way out there in front; then you
19 have these other things that are very important things
20 but demand management is first. Is that a fair
21 impression?

22 A. Well, I think we have explored that
23 demand management is a very high priority.

24 Q. We were talking about the
25 demand/supply planning strategy yesterday and we were

1 looking at the general strategic principles on page 15.

2 And I'm looking at --

3 THE CHAIRMAN: Exhibit...?

4 MR. SHEPHERD: This is Exhibit 74, Mr.
5 Chairman.

6 THE CHAIRMAN: 74.

7 MR. SHEPHERD: Q. And if you could look
8 at general strategic principle 1.4, this is the
9 leadership on the environment and social benefits
10 principle.

11 Now, how do you implement such a
12 principle? I don't want the whole story, I understand
13 this whole hearing is about that, in essence, but I
14 guess what I'm driving at here is: If a particular
15 policy would support such a principle, would help to
16 implement such a principle, would that then mean that
17 that policy would, all other things being equal, be
18 implemented in fact?

19 MS. HOWES: A. I don't quite understand
20 the question. Could you rephrase it?

21 Q. Okay. You have --

22 THE CHAIRMAN: This is the first time
23 that Ms. Howes has had to deal with the all other
24 things being equal hypothesis, which other panelists
25 have had to struggle with.

1 MR. SHEPHERD: Q. I'll come at it a
2 different way, Ms. Howes. Let's suppose, just for
3 argument sake, that the best way of protecting the
4 environment and encouraging the social benefits of your
5 activities is to recognize environmental and social
6 costs and benefits expressly through operating
7 decisions, ratemaking decisions, planning decisions in
8 dollar terms.

9 Let's just hypothesis that that is the
10 best way of achieving 1.4. Does this principle,
11 therefore, suggest that you should do that?

12 MS. HOWES: A. Okay. And this is
13 probably also related to all things being equal.

14 We have the scientific information to
15 determine what the environmental effects are, we know
16 the full range of environmental effects, full life
17 cycle, we know the monetary costs associated with each
18 of these, we are able to quantify the social costs or
19 the socio-economic implications as well.

20 It may be one way of achieving this
21 objective, all things being equal.

22 Q. I deserved that. Now, you couch that
23 in a condition that you have to be able to get all of
24 the numbers exactly right to do it; right, you have to
25 be confident on all of the quantification that you are

1 doing in order to implement a policy like that.

2 A. I wouldn't say exactly right. I
3 mean, environmental science you are probably never
4 going to get an exact number to two decimal places, but
5 I think you have to be aware of the full range of
6 environmental effects, you have to know well be beyond
7 just emissions, you have to look at the effects on air,
8 water, land, people and there are a whole range of
9 environmental effects, sure.

10 Q. Now, when you put a number on
11 reliability all you do is customer survey; right?

12 MR. SNELSON: A. We did do customer
13 surveys for determining the value of reliability to our
14 customers, and that was one of the inputs to our
15 reliability determination.

16 Q. That doesn't sound like the same sort
17 of scientific certainty that Ms. Howes is talking
18 about.

19 A. It's not certain, no, it has
20 uncertainties associated with it.

21 Q. Still on this, but I guess I want to
22 come at it from a different perspective, go down to the
23 bottom of this page 15 and there Ontario Hydro says:

24 "In developing plans, the secondary
25 criteria...", and that's this whole list

1 of criteria here:

2 "...will be quantified to the degree
3 practical."

4 Now, why is that something that you would
5 like to do as planners? Why would you want to do that?
6 [10:15 a.m.]

7 A. Well, clearly, if things can be
8 quantified and that can be an aid to taking them into
9 account in decision making. Quantification may be in
10 physical terms or it may be in other terms.

11 Q. Is part of the reason for quantifying
12 criteria to be able to compare dissimilar attributes by
13 giving them a common measuring stick?

14 A. I don't think that's what is being
15 referred to here. It's to being able to, if you can
16 quantify something, then you are better able to judge
17 whether its effect is significant, whether or not they
18 are quantified in the same terms.

19 Q. Go back up to 1.5, please. This
20 seems like a very either/or sort of principle.

21 Rates must continue to be based on cost.
22 Presumably, that is mandatory and there is not much
23 room for doubt. You either do it or you don't, right?

24 A. I think this is a question for Dr.
25 Long.

1 DR. LONG: A. Finally. [Laughter].

2 Q. I wouldn't want him to feel left out.

3 A. Yes, well, it's my understanding that
4 requirement flows from the Power Corporation Act.

5 Q. Okay. Is one of the implications of
6 that that you cannot include in your rate base
7 something that is not a cost?

8 A. I guess it would depend on an
9 interpretation of the Act. But that's certainly my
10 understanding, yes.

11 Q. Presumably, well, no, let me come
12 back a different way. There's nothing in that
13 principle, is there, that prevents you from incurring
14 costs that you do not need to incur in order to get
15 benefits to your customers, to the people of Ontario,
16 or to the system? There's nothing in that that
17 controls what costs you incur, right?

18 A. I think that is true, yes.

19 Q. So, for example, the 10 per cent
20 preference premium is a cost you don't have to incur,
21 right?

22 A. I am just struggling a little as to
23 how that becomes a cost. It's a factor in determining
24 the price that we pay, say for NUG or demand management
25 initiatives. I guess to that extent it does become a

1 cost.

2 Q. I guess what I am driving at here is
3 that I'm trying to distinguish between including things
4 in your rates that aren't money you spent on the one
5 hand and deciding to spend money that you don't have to
6 spend, that is, you could do the job cheaper if you
7 wanted to because you want to get certain other
8 benefits out of those additional expenditures. And the
9 latter is okay, and the former is not okay, right?

10 A. That's my understanding, yes.

11 Q. Okay. And I take it that means, and
12 we have talked about the power of cost concept and how
13 it impacts on the question of monetizing externalities,
14 monetizing environmental and social costs and benefits.
15 And I take that means that you can't monetize them and
16 charge them to rates unless you actually spend the
17 money on getting those benefits; correct?

18 A. I am not sure on that one, whether or
19 not the Act would actually provide a barrier.

20 Q. I'm not asking you about a legal
21 question, though. I'm asking you how as planners you
22 implement your own strategy. The lawyers will wrangle
23 about the legal question lots, don't worry.

24 A. Can you rephrase that? I'm just
25 having some difficulty making the connection back to

1 the strategy from what you just said.

2 Q. The strategy says rates must continue
3 to be based on costs. Now you can't in your ratemaking
4 say, well, in addition to the costs we spend on
5 nuclear, for example, there are these other
6 environmental externalities that are costs to society
7 of nuclear and we feel we should charge our customers
8 for them because they are getting the electricity.
9 That would not be basing rates on cost, right? You
10 would be breaching the principle.

11 A. I believe so, yes.

12 Q. On the other hand, if you were to
13 say, we believe that where demand management displaces
14 coal, it's worth an additional two cents a kilowatthour
15 or three or five cents a kilowatthour and you actually
16 pay that for demand management programs as a result.
17 That doesn't breach the principle, does it?

18 A. No, I think that's a cost we incur,
19 yes.

20 MR. SNELSON: A. Mr. Shepherd, I tread
21 in here with great trepidation. I believe there may be
22 some limits on what you have suggested and they are
23 legal questions which I believe that there is some
24 principle that costs have to be reasonably incurred or
25 some other such requirement. It's legal and I couldn't

1 express an opinion on it.

2 MR. HOWARD: Mr. Chairman, as my friend
3 Mr. Shepherd recognized when he started, he didn't want
4 a legal interpretation.

5 MR. SHEPHERD: No, I don't.

6 MR. HOWARD: If he wants one I'll give
7 him an analysis.

8 MR. SHEPHERD: Q. So as a planner, then,
9 you would feel that you are constrained in you can only
10 go so far in paying extra for conservation, for
11 example?

12 MR. SNELSON: A. No, I don't believe so.
13 As planners, though, there are questions that arise and
14 we have to seek legal counsel at times on these issues.

15 Q. All right. Subject to the legal
16 limit, whatever it is, if your lawyers say, this is how
17 far you can go and no farther, within that limit you
18 are not constrained.

19 A. I believe the situation within that
20 limit is as described by Dr. Long.

21 Q. Okay. Now, we talked briefly
22 yesterday about the difference between the primary
23 criteria in 1.7 - the primary criteria being the
24 mandatory ones that must be met - and the secondary
25 criteria which may influence plans. And that's a

1 prioritization of those criteria, right?

2 A. Yes.

3 Q. So it goes without saying, I take it,
4 that low cost is a more important criteria than
5 environmental characteristics.

6 A. As described here, yes. I did
7 indicate in my direct evidence that the distinction
8 between environmental requirements which is a primary
9 criterion and has equal weight in this list to low cost
10 and environmental characteristics, which is the
11 secondary criterion, is a good theoretical distinction,
12 but in practice the distinction gets somewhat blurred.

13 Q. And the reason for that is because at
14 a certain point when you decide to achieve a certain
15 environmental objective, you, in effect, make that a
16 standard and move it up to the top list; is that right?

17 A. If we set an environmental standard
18 for ourselves, it becomes a primary criterion.

19 Q. Now, you have put in evidence all of
20 your environmental standards? We could look at the
21 evidence and find out what the standards are that are
22 not regulatory? Aside from the 1 per cent of DELs; I
23 don't want to talk but that.

24 MS. HOWES: A. I'm just troubled with
25 the word "all." I would say probably the relevant

1 standards are included in the direct evidence.

2 Q. Okay.

3 A. I don't think we have told you all
4 Hydro's environmental standards.

5 Q. Okay. Now, where one of your
6 environmental policies, if you like, is, let's say, we
7 will do our best on CO(2). Let's say it's, you know,
8 we will work towards having less CO(2). Is that a
9 standard?

10 A. I'm struggling with the word
11 "standard" because it has a legal interpretation. We
12 don't have a standard for CO(2). It's a semantics
13 issue that I think that I'm struggling with here. I
14 would see it as a policy, a direction. Standard is
15 the difficulty I'm having here with the question, the
16 way it's phrased.

17 Q. Mr. Snelson, you are the one who told
18 us about moving things from secondary to primary
19 criteria when they become standards. You agreed with
20 that. So perhaps you can tell us where the line is.

21 MR. SNELSON: A. Well, I think I
22 indicated in my direct evidence that it's very hard to
23 draw the line. Where there are things that are clearly
24 standards, then there are a number of uncertainties as
25 to things that might be classed as standards, as

1 environmental requirements, which are primary or
2 environmental characteristics that are secondary.
3 [10:26 a.m.]

4 And I indicated in my direct evidence two
5 questions as to where this line gets blurred. One is
6 that there can be internally set standards, and an
7 example of an internally set standard was that in the
8 late 1980s we set ourselves a standard to be below the
9 legal emission limits for acid gases.

10 The legal limits were reduced in 1986, I
11 believe, and again in 1990, and we set ourselves a
12 standard for the intervening years to be somewhere
13 between those two levels to come down to the 1990
14 level.

15 The other area of uncertainty as to the
16 clear distinction between the primary and secondary
17 environmental considerations is that a forecast that we
18 would have to meet a standard in the future could also
19 be considered to be primary criterion.

20 And so you will notice that we have
21 discussed the possibility of future standards in our
22 direct evidence in this panel.

23 Q. Okay. The primary criteria are
24 things that you must meet; correct?

25 A. Yes.

1 Q. So where you sort of contemplate, for
2 example, a lower NOx limit, but you don't treat that in
3 your planning as something that you must achieve,
4 that's not a standard; is it?

5 It's not one of your primary criteria if
6 you are not treating it as having to have to meet it;
7 is it?

8 A. There difference in degrees of
9 weights, must have and nice to have are kind of nice,
10 clear distinctions but there are a variety of degrees
11 of weight that are given to things according to the
12 likelihood that we will have to meet them.

13 Q. Would it be fair to say that if we
14 took your primary criteria list and your secondary
15 criteria list and we just put them together and we said
16 they are all really one big list, but some are more
17 important than others or, at any given point in time,
18 some are more important than others; is that a fair
19 characterization?

20 A. Well, we have divided them up here
21 but we did do that in our direct evidence. For
22 instance, when we talked about environmental
23 characteristics of options, we did not separate out
24 when we were talking about a primary environmental
25 requirement versus a secondary environmental

1 consideration. So we have, to some degree, done that
2 ourselves.

3 Q. Understood. Although I guess it is
4 fair to say; isn't it, that if you are faced with two
5 plans, both of which meet all your emissions
6 requirements for example and one of them is cheaper,
7 you have got to choose the cheaper one under these
8 rules; right?

9 A. That's not our practice.

10 Q. Okay. So you can abridge the low
11 cost test to meet one of your secondary criteria?

12 A. Yes. And during the development of
13 the strategy - and I can't recall exactly when that
14 occurred - the strategy with respect to cost at one
15 point in time read lowest cost and it was quite
16 explicit and intended that the word lowest was replaced
17 by low to provide for something other than lowest cost
18 if there were benefits in other areas such as
19 environmental or social considerations and so on.

20 Q. That's a critical point; isn't it,
21 that you are no longer saying lowest cost, you are
22 saying low cost; isn't that right?

23 A. That is a very critical point and it
24 was an intentional wording in the strategy that was
25 done, fully intending it to be used for that purpose.

1 Q. But, Mr. Snelson, it's true; isn't
2 it, that your current policy today, as we speak, is not
3 low cost but lowest cost; isn't that correct?

4 A. No.

5 THE CHAIRMAN: I think he just said it
6 wasn't, he said that there were times when they didn't
7 take the lowest cost.

8 MR. SHEPHERD: Yes, I know, Mr. Chairman
9 but I'm afraid I'm going to call Mr. Snelson a liar so
10 I had to set him up --

11 THE CHAIRMAN: Well, I don't think you
12 better do that, I hope.

13 MR. HOWARD: I don't think he better do
14 that either, Mr. Chairman.

15 MR. SHEPHERD: Q. Mr. Snelson, I hadn't
16 prepared this as an exhibit, I though I would get a
17 different answer.

18 Mr. Snelson, isn't it true that on March
19 13th your chairman wrote to all senior management your
20 business planning assumptions and in it said the
21 following:

22 Our focus will be on providing
23 energy services to customers at the
24 lowest possible cost.

25 March 13th 1992. Isn't that true?

1 MR. SNELSON: A. He may very well have
2 written that.

3 Q. Well, isn't that your policy?

4 A. I think you would have to read the
5 whole of the business planning assumptions document to
6 form that view, because I think you will find that in
7 business planning assumptions are plans for demand
8 management, for the continuation of programs for
9 scrubbers and so on, coal-fired plant, which in many
10 cases if one was to strictly interpret those words
11 would not be part of lowest cost.

12 It is clear that the Corporation wants to
13 achieve lower costs, and that's one of the priorities
14 that the chairman was presenting. There are many
15 things in our plans that would not strictly come within
16 the definition of lowest cost.

17 MR. SHEPHERD: Mr. Chairman, by the way,
18 I will undertake to file this whole document which is
19 an exhibit at the Ontario Energy Board before tomorrow
20 morning. I just have to get it copied.

21 Q. So, Mr. Snelson, where your chairman
22 says your focus will be and he uses the words lowest
23 possible cost, he's just overstating the case a little
24 bit; right? It's not really what he means?

25 MR. SNELSON: A. I hesitate to fully

1 interpret the words of the chair of Ontario Hydro, but
2 I am referring to the specifics of our plans and our
3 plans include many things that are there for good
4 reason, environmental and social, that wouldn't
5 necessarily be there if one was to take a very narrow
6 focus of lowest cost.

7 Q. Okay.

8 MR. SHALABY: A. Mr. Shepherd, I thought
9 you promised us yesterday that you had finished with
10 semantics. I don't know whether you are coming back to
11 semantics or not.

12 Q. Well, unfortunately, I don't think
13 this is semantics, and I think --

14 A. That gives you my opinion of what
15 this is.

16 Q. Well, Mr. Snelson, didn't you make it
17 clear that the difference between lowest and low is
18 really critical?

19 MR. SNELSON: A. We certainly made that
20 change in the strategy with our eyes open for that
21 specific reason.

22 Q. Okay. Let's look at some of the
23 specific strategies. Now, I'm obviously not going to
24 go through every strategy item in the DSPS, you will be
25 happy to know, but there are some that do appear worthy

1 of clarification.

2 Perhaps you could look on page 16 of
3 Exhibit 74 and you will see under a heading 2.2
4 Response to Uncertain Growth. And as I read 2.2.2 and
5 2.2.3 I understand that to say that at the time your
6 thinking was you would plan to the upper but you would
7 implement to the median. Is that a fair
8 characterization?

9 A. Definitely the strategy elements do
10 permit us to be seeking environmental approvals and
11 other such definition phase work on the basis of the
12 upper load growth, and the strategy is quite explicit
13 that we should be committing in time to meet the median
14 load growth.

15 So that the strategy is concerned with
16 the balance between being prepared to meet upper load
17 growth and not overspending to meet median load growth.

18 Q. Mr. Snelson, there's no trap here.
19 It says here:

20 Demand options will be
21 implemented and supply options will be
22 committed in time to meet the median load
23 growth.

24 And it says in 2.2.4:

25 Preparations for demand and supply

1 options will be undertaken in time to
2 meet the upper load projection.

3 So you plan for the upper and you
4 implement for the median; isn't that right?

5 A. Yes. There is another nuance in
6 there and, that is, in time to meet the median load
7 growth economically and reliably. The word
8 economically is significant in that statement.

9 Q. Okay. Now, you plan to the median;
10 right?

11 A. No, we are planning around the
12 median.

13 Q. Oh, that's a distinction. I fear we
14 are stuck in semantics here. Is there a difference
15 between planning around the median and planning to the
16 median?

17 A. Yes.

18 Q. Okay. And what is it?

19 A. Well, planning around the median in
20 the way in which we have used it, and I think Mr.
21 Shalaby has discussed it in his direct evidence, is in
22 our view a different way of managing uncertainty and
23 meeting the strategy elements that are indicated on
24 page 16.

25 It's a way of doing so through looking at

1 the risks and responses that we have and coming to the
2 conclusion, in this case, that we have sufficient
3 flexibility without seeking major supply approvals at
4 this time.

5 Q. All right. I think it was just a
6 semantical difference.

7 Well, given that you are now planning
8 around the median, are you implementing still to meet
9 the median or are you implementing now to meet the
10 lower? You had a two-staged thing here; right?

11 A. Yes.

12 Q. Your plans would be set up for the
13 upper but you wouldn't make your commitments until the
14 median said you needed it.

15 Now, you are planning to the median. Are
16 you implementing or making commitments when the lower
17 says you need it or when the median says you need it?

18 A. We are making commitments as we see
19 appropriate and that would include having at least
20 enough commitments to meet the median.

21 Q. Okay. So in terms of the actions
22 that you expect to take in the future, that you will
23 actually take in the future, I take it that the DSP
24 Update, shifting to this planning around the median,
25 that doesn't change the timing and extent of any of the

1 commitments that you will ultimately make; right?

2 A. It may change the nature of the
3 commitments we make.

4 Q. Okay. I'm just dealing here with
5 this change to planning around the median, I'm not
6 dealing with the other aspects of the DSP Update, just
7 this different level of planning target, if you like.

8 And if I understand you correctly, 2.2.3
9 which says:

10 Demand options will be implemented and
11 supply options will be committed in time
12 to meet the median load growth
13 economically and reliably.

14 Is still your strategy and the DSP Update
15 is still consistent with it?

16 A. Yes.

17 Q. And 2.2.4, where it says you will
18 prepare on the basis of upper load, that's now more
19 like the median, it's not quite clear but it's more
20 like the median?

21 A. I think that the point about 2.2.4 it
22 says:

23 Preparations for demand and supply
24 options will be taken in time to meet
25 the upper load projection.

1 It doesn't say what those preparations
2 should entail and it doesn't say that it should only be
3 supply options, it also talks about demand options.

4 Q. No, of course.

5 A. And as you will have heard, we have
6 in our projections of demand management and non-utility
7 generation and hydraulic, which are preferred over
8 major supply options, we have the potential to create
9 more than we need for the median load growth, and our
10 strategy for surplus management is to put off making
11 the decisions on how to cut back until we start to see
12 whether the surplus develops.

13 Now, obviously you can't put those
14 decisions off forever, things come to decision points
15 and you have to make up your mind on that particular
16 one now.

17 Q. Yes.

18 A. And, for instance, that has been done
19 on certain non-utility generation projects, but in the
20 case of the demand management program, for instance,
21 that is going full steam ahead for the 5,200 megawatt
22 target if we can achieve it.

23 We are still seeking approvals for the
24 hydraulic and we still look to the flexibility of
25 non-utility generators to provide additional power, if

1 required.

2 Q. Two things. First that 5,200 is now
3 4,800; right?

4 A. No. I believe it's been explored
5 through this panel that our target is 5,200, the
6 estimate that we have used in preparing the plans is
7 about 4,800.

8 Q. All right. I am just confused. It's
9 okay. You talk about the flexibility that you get from
10 NUGs - and it's not on this, it's just something that's
11 been bugging me throughout this - you have basically,
12 correct me if I'm wrong, you have basically two types
13 of NUGs; don't you, you have the NUGs that their
14 primary value is short lead time and, therefore,
15 flexibility and they have some environmental benefits
16 but they are primarily short lead time options; and
17 then you have a second category which is like small
18 hydro and wind and things like that, which may have
19 some aspects of short lead time but their primary value
20 is environmental characteristics.

21 Is that a fair assessment?

22 [10:40 a.m.]

23 A. We have some with those sorts of
24 characteristics. I think those are two extremes, I
25 think there were intermediate stages in that.

1 Q. Of course.

2 A. And we have defined what we consider
3 to be preferred non-utility generators and what we
4 consider to be major supply non-utility generators.

5 Q. But, for example, landfill gas,
6 that's not a short lead time flexibility-oriented
7 option, is it? It's an environmental option; is that
8 right?

9 A. It's option which has certain
10 beneficial resource use characteristics and it may also
11 have some environmental benefits.

12 Q. And when you talk about the
13 flexibility side, flexibility being critical to your
14 planning, for the most part you are talking about
15 combined-cycle gas facilities, right? For the most
16 part, not all.

17 A. Yes, to a large degree.

18 Q. Okay. And that is the major supply
19 NUGs category, if you like?

20 A. Yes, combined-cycle facilities and
21 combined-cycle facilities with small amounts of
22 cogeneration.

23 Q. Yes, of course.

24 And in fact, I guess those two different
25 types of NUGs, I understand you are not agreeing that

1 they are two distinct categories, that there is a
2 continuum. But you use them differently in planning,
3 don't you?

4 Major supply NUGs and that sort of
5 flexibility-oriented option has a different role in
6 planning than small Hydro and wind and landfill gas and
7 those sorts of things, correct?

8 A. Yes.

9 Q. And could you describe those two
10 roles?

11 A. I think you have just described them
12 to some degree. The major supply non-utility
13 generators are considered to be alternatives to Ontario
14 Hydro major supply. They are alternatives where we
15 recognize that they would use natural gas as a fuel,
16 which has certain resource use implications at
17 relatively high efficiency and with a relatively short
18 lead time and relatively little environmental
19 emissions.

20 So those are the types of characteristics
21 we see for the major supply non-utility generators.
22 The preferred non-utility generators form quite a
23 spectrum of renewable energy resource uses which we see
24 as preferable over the long run. Use of waste fuels,
25 use of fuel at higher efficiency than you could get

1 from an electricity-only generating plant. And these
2 are the sorts of benefits that in some cases one has to
3 take them at times when the opportunity is available.
4 They, in some ways, have less flexibility than the
5 major supply NUGs.

6 Q. I am going to come back to that. But
7 I guess what I was really after there is the different
8 way in which you, as a planner, deal with those two
9 types of NUGs. Would it be correct to say, for
10 example, that the essence of the decision on whether
11 you acquire major supply NUGs is first, do we need the
12 capacity and energy and second, should we do it or
13 should they do it, which is cheaper or which is more
14 efficient or whatever? Is that the essence of the
15 decision?

16 A. To buy major supply NUGs you would
17 have to answer "yes" to both those questions, that we
18 would need it and that it would be better for somebody
19 else to do it than for us to do it.

20 Q. Okay. In the case of the preferred
21 NUGs, the planner's decision is quite different, isn't
22 it? And again, correct me if I'm wrong, that the first
23 step in your decision is do we wish to achieve the
24 environmental goal or the other goal, whatever it is,
25 perhaps regional development, social benefits, et

1 cetera.

2 And then the second question is not
3 whether Hydro should do it or the private sector
4 because typically Hydro can't do it anyway, but rather
5 how do we best procure is this? Is that a fair
6 characterization?

7 A. No, I don't think it's quite that
8 simple.

9 Q. Well, no, I realize I'm
10 oversimplifying but I'm just trying to get the essence
11 of it. Maybe you could describe it if my description
12 is poor.

13 A. Well, I would just modify your
14 description that the primary question is still whether
15 one needs the electricity. That's the primary purpose
16 of these facilities. And in deciding on how to meet
17 the need for electricity then one takes into account
18 environmental and social considerations and that may
19 very well lead to the selection of these types of
20 options.

21 Q. So, you would then not acquire
22 preferred NUGs for the purpose of getting the
23 environmental benefits, in the sense that first you to
24 identify the need for capacity and energy and nothing
25 happens until then, right?

1 A. Their primary purpose is to produce
2 electricity and they, in many cases are environmentally
3 preferred ways of producing electricity. And because
4 of the nature of the resources and the nature of the
5 way in which they would be developed, then you tend to
6 have to do that on a schedule that is in some degrees
7 a compromise between the needs of the electricity
8 system and the needs of the developer for whatever
9 other purpose that plant is serving.

10 Q. So to the extent that it is not need
11 driven, that is an aberration, in effect, in the basic
12 structure of the planning decision, need first, fill
13 it; correct?

14 A. To a large degree.

15 Q. All right. The next page deals with
16 resource preferences, and I just have a couple of brief
17 questions there. Electricity efficiency which you are
18 talking about here, that doesn't include things like
19 small load displacement cogeneration which is energy
20 efficiency but not electricity efficiency, right?

21 A. Are we on page 17?

22 Q. Yes.

23 A. The word that is used, electricity
24 use efficiency.

25 Q. So that's EEI, as opposed to other

1 things that may accomplish the same result but are not
2 quite the same thing.

3 A. It is improvements in the efficiency
4 of use of electricity and it doesn't include switches
5 from electricity generated by Ontario Hydro to
6 electricity generated by somebody else.

7 Q. So, if you have, and this is not I
8 guess uncommon, you can correct me if I'm wrong. If
9 you have a hospital that develops - just use a hospital
10 as an example - a comprehensive energy management plan
11 and they are going to put in new light bulbs and motors
12 and special timers and all the things that you can do,
13 and there's quite a number of them in a hospital. And
14 one of the things they are going to do is replace their
15 old, inefficient gas boiler with one of the
16 high-efficiency small load displacement cogen
17 facilities with a chiller. And this is quite
18 commonplace isn't it, this is the sort of package that
19 the hospitals are looking at right now?

20 MR. SHALABY: A. I don't know that for
21 sure.

22 Q. All right. Well, will you accept
23 that it is, subject to check?

24 MR. SNELSON: A. We can accept that
25 there are cases where energy management plans involve

1 both energy efficiency use and possibly some
2 cogeneration

3 Q. Now, the way your strategy is set up
4 right now, all of the other stuff except for the
5 cogeneration chiller package, all that other stuff is
6 your highest resource preference, electricity use
7 efficiency, typically. But the cogen chiller package
8 is based on a scarce fuel that is not indigenous to
9 Ontario so it is quite lower down on the list, right?

10 A. With regard to the primary energy
11 source, yes.

12 Q. And, in fact, the difference is so
13 great that you don't even allow the same department to
14 deal with both of them, right?

15 A. That is not the reason for it being
16 dealt with by different departments.

17 Q. But it is a fact.

18 A. We administratively deal with our
19 demand management program through our energy management
20 branch and our regions branches. And the non-utility
21 generation program is handled by our non-utility
22 generation division.

23 Q. Of course. Seems sensible. Now, of
24 course one of the reasons why is because that small
25 load displacement cogen facility is still considered

1 quite preferred by Ontario Hydro, right?

2 A. If it is high efficiency, yes.

3 Q. And the reason is this last line in
4 2.4.1, "processes which convert fuel into electricity
5 at high efficiency will be favoured"; correct?

6 A. Yes.

7 Q. Now, the whole of 2.4.1 is an express
8 prioritization of sources, right?

9 A. It prioritizes primary energy sources
10 by their nature of the primary energy source and by its
11 origin. And it also has preference associated with the
12 efficiency of conversion.

13 Q. That is what I'm going to get to.
14 But first, the two lists, they are express
15 prioritizations, No. 1, No. 2, No. 3, in this order,
16 correct?

17 A. Yes, there are two lists of three
18 items.

19 Q. Okay. Now, presumably this high
20 efficiency exception changes the order somewhat, has
21 some influence on the order?

22 A. Yes.

23 Q. How?

24 A. It's in a different dimension and so
25 I don't think that one can necessarily define exactly

1 to what degree it changes that. But I think you can
2 get an example of how we have applied in that the 10
3 per cent preference premium, which is given to the
4 highest priority type of energy resources - that's the
5 energy use efficiency, renewable energy in waste
6 fuels - and it also requires it to be the highest
7 priority with regard to source and that it be Ontario
8 indigenous energy resources or electricity efficiency.
9 That priority premium is also given to cogeneration
10 that meets the heat rate requirement on efficiency even
11 though it's a scarce fuel coming from outside of
12 Ontario.

13 Q Hmm. Okay. Before I leave this
14 section I just want to ask one question of
15 clarification about 2.4.2. This may be just obvious, I
16 just want to make sure I understand it correctly.

17 When you talk about diversity there, you
18 mean the overall diversity of the system that ends up
19 being in place after you add an option, right, you don't
20 mean the diversity of the options you are adding.

21 A. It could apply to both. Clearly,
22 there is value to having a diverse set of options in
23 the system and that provides flexibility and resilience
24 against changes in the cost or performance of any one
25 element of the system.

1 There is also value to having diversity
2 in the mix of options that one is seeking, in that if
3 during the process of seeking new options there is
4 something that makes one of those look less attractive
5 then one is less sensitive to them.

6 Q. I guess I wasn't asking about whether
7 it's good to have a diverse menu. This is talking
8 about how you make choices. And when you choose a
9 package of new options, you say these are the ones that
10 we are going to add in the next 10 years, it doesn't
11 matter how diverse the ones you add are, does it? It
12 only matters how diverse the system is at the end of
13 the day, right?

14 A. My judgment is that diversity matters
15 in both respects.

16 Q. All right. Let me turn to demand
17 management. I don't have a lot on demand management
18 because my friends will be dealing with most of the
19 demand management areas. But I do have a couple of
20 things.

21 First in 3.1, this is your basic
22 electrical efficiency principle. And you say:

23 Demand reducing options through
24 increased electrical efficiency will be
25 aggressively pursued... this is what I was

1 to emphasize:

2 ...to the full extent they are economic
3 compared to the available supply options
4 in the relevant planning period.

5 And I know what you have said in these hearings about
6 the priority of demand management, et cetera. But just
7 reading that at first blush, it seems to say, if
8 electrical efficiency is cheaper than or the same cost
9 as nuclear, for example, then you will do it. But if
10 it is more expensive, you won't.

11 Is that what the principle says?

12 MR. SHALABY: A. Maybe I will butt in
13 here a bit.

14 [10:57 a.m.]

15 The way you are characterizing it,
16 perhaps even the way it's written here, doesn't capture
17 the full nature of demand management and I think
18 perhaps that can shed a light on this thing of priority
19 and what is more important than others.

20 Demand management is something that is
21 closely linked to customer service, it is closely
22 linked to dealing with our customers and looking after
23 their energy needs; it isn't something that is totally
24 optional, that a company does or doesn't look after its
25 customers, in the same way that maintaining the

1 existing system is not totally optional either, you
2 have got to maintain the existing system.

3 So I think the nature of demand
4 management is now being recognized in the company and
5 elsewhere that it's not just something you add or not
6 add, or something that is lower in cost or not lower in
7 cost, it's very closely linked to customer service,
8 it's very closely linked to being a service
9 corporation.

10 So it is not entirely a question of: Is
11 this cheaper than nuclear, we do it; if isn't cheaper
12 than nuclear, we don't do it; there are other aspects
13 to demand management that are related to customer
14 service.

15 Q. Of course in the 60s you were a
16 service corporation too; correct?

17 A. I would like to think we have always
18 been a service corporation.

19 Q. But demand management had a different
20 meaning then, didn't it, it meant increasing demand;
21 right?

22 A. At the time there were times in
23 Hydro's history where demand management meant
24 increasing demand, yes.

25 Q. And that was also to serve your

1 customers better; right?

2 A. That was the perception at the time,
3 yes.

4 Q. Okay.

5 A. I'm just trying to add another
6 perspective on this strict prioritizing of things as
7 one, two or three. You will this first and only when
8 you finish you go to this, and then when you finish you
9 go to that, perhaps is oversimplification.

10 Q. So this strategy element then, what I
11 hear you saying - and maybe I'm just misunderstanding -
12 what I hear you saying is, we shouldn't take this as
13 gospel here, that it still has to be dealt with in the
14 context of the broader issues of what demand management
15 is, and it may not mean what it actually looks like
16 it's saying?

17 A. I like the idea of it's got to be
18 taken in context of the broader issue, yes. It's a
19 long strategy document, to pick one line in it, one
20 line doesn't give the full story.

21 Q. Okay.

22 A. The entire document gives the full
23 story. And the same with the issue of environment
24 versus life extension versus demand management. Demand
25 management has an environmental side to it, life

1 extension has an environmental side to it and has an
2 efficiency side to it.

3 So I'm just saying things are
4 interrelated and not clean cut, this is only life
5 extension, this is only efficiency improvement, this is
6 only environmental activity. Many things a company
7 does touches on all of these angles sometimes.

8 Q. If this Board were to conclude at the
9 end of the day -- you have got a strategy item that
10 says if it's cheaper or no more expensive we will do
11 it, otherwise we won't - which appears to be what this
12 says - is inappropriate, let's say this Board concludes
13 that, that that would be inappropriate as it's worded.
14 I hear what you are saying to be that they don't need
15 to worry about that because you will apply that
16 strategy element using reasonable judgment to apply it
17 according to the broader sense of what you are doing,
18 you will serve your customers well regardless of what
19 that says. Is that fair?

20 A. Not regardless of what that says, in
21 the spirit of what that says to the extent we can, yes.

22 All I'm indicating here is that strict
23 listing of things, one, two, three, strict
24 interpretation of every word to every situation, these
25 principles apply generally, apply most of the time, but

1 life is more complex than a list of things and more
2 complex than a strict algorithm of, you will do this
3 and only when you are finished you will check again and
4 you will do that and so on. It's not a strict
5 algorithm like that.

6 Q. Okay. On the next page in 3.5.2 one
7 of your strategy elements is:

8 Priority should be given to
9 influencing the new market rather than
10 the retrofit.

11 And, Mr. Snelson, you talked about --
12 well, no, let me first come back to the basic point.

13 Is it true that one of the implications
14 of this principle is that during a period of high
15 capital investments by business, by industry such as
16 during an economic recovery, you should be implementing
17 special programs to capture that special opportunity
18 when people are buying new equipment. Is that fair?

19 A. That's fair, and Panel 4, I think,
20 indicated that.

21 Q. Okay. And Ontario Hydro is currently
22 predicting a significant economic recovery in '92 and
23 '93; right?

24 A. Recovery, whether it's significant or
25 not I'm not exactly familiar, or I don't know what is

1 significant, is 2 per cent significant or 3
2 significant. A recovery. Most economists tell us it's
3 going to be a slow recovery. I don't know what the
4 latest Ontario Hydro projections are exactly.

5 Q. Dr. Long, isn't it correct that your
6 current projections are for what Hydro terms a strong
7 economic recovery?

8 DR. LONG: A. Like Mr. Shalaby, I'm not
9 intimately familiar with the very latest projections
10 but, yes, I believe we are projecting a recovery.

11 Q. So I assume - and obviously we can't
12 rely on Panel 4 for this because Panel 4 wasn't faced
13 with this economic recovery in '93, was it - I assume
14 that Hydro has developed some sort of special program
15 or set of programs to capture the special opportunities
16 that arise during an economic recovery in terms of
17 demand management; is that correct?

18 MR. SHALABY: A. Many of the programs
19 that are in place today are capable of capturing that
20 potential. I'm not aware that there are special
21 recovery programs, that I'm not aware of.

22 Q. The same is true, I take it, Mr.
23 Snelson, from your earlier comments with respect to
24 many types of non-utility generation, there are certain
25 times when you have the opportunity and you have got to

1 get them then; right?

2 MR. SNELSON: A. In some cases, yes.

3 Q. So, for example, the best time to get
4 a company to buy an efficient machine is when they are
5 going to buy a machine anyway; right?

6 A. Yes.

7 Q. And if that machine is a boiler then
8 when their old boiler is worn out or when they have
9 decided to replace it, that is the very best time to
10 get them to switch to cogen; right?

11 A. Certainly theoretically, that is so.

12 Q. But in the same way as your demand
13 management programs don't contain any special action
14 plan for an economic recovery, I understand that they
15 will capture it anyway, but they don't have a special
16 action plan. Your NUGs policies don't attempt to
17 capture the economic recovery next year either; do
18 they?

19 A. I don't know of any additional NUG
20 policies that would do that. The people in the NUG
21 division are more familiar only with the specific
22 programs that are there.

23 Q. Well, in fact -- I mean, we know I
24 think from your evidence, that your NUG people are
25 saying no to new projects; right?

1 A. At this point in time, subject to
2 certain limitations, there are certain projects that
3 they are saying yes to, but there are some projects
4 that they are saying no to.

5 Q. So if Dofasco or Stelco or Inco or
6 somebody like that comes to you and says: listen, we
7 are in the middle of a recovery, we are going to go out
8 and replace these boilers, we would like to move to
9 cogen but we can't use all the electricity, can we sell
10 some of it to you? You would say: No thank you, buy
11 gas boilers; right?

12 A. At the moment we are not accepting
13 new proposals for cogeneration facilities over 5
14 megawatts is my belief.

15 Q. And if they said: Well, that's okay,
16 you don't have to buy it, Ontario Hydro, we will sell
17 it to the municipal utility in whose district we are,
18 you would say to the municipal utility, we won't allow
19 you to do that; correct?

20 A. I believe that policy is under
21 review.

22 Q. Now, if they have to replace the
23 boiler, once they replace it, that opportunity is lost
24 for 20 or 30 years; correct?

25 A. It may be. I'm not sure of whether

1 in fact it's possible to make provisions for the future
2 addition of the non-utility generation.

3 Q. And, Mr. Shalaby, coming back to
4 demand management, which we are supposed to be talking
5 about right now, one of the aspects of your demand
6 management program is fuel switching; right?

7 MR. SHALABY: A. Yes.

8 Q. And if we are in a recovery this
9 winter, then wouldn't that be a really good time to
10 move on fuel switching when people are replacing their
11 heating systems, et cetera?

12 A. I don't see the link between people
13 replacing their heating systems and the recovery.

14 Q. Isn't one of the characteristics of
15 an economic recovery an increase in capital investment?

16 A. I will accept that, yes.

17 Q. Okay. Where the economy has more
18 capital investment, isn't it the evidence we heard from
19 Panel 4 that that's the best time to implement a
20 program that requires capital investment?

21 A. I'll accept that. It's better than a
22 dead recession, yes.

23 Q. Okay. But in fact you originally
24 planned to implement fuel switching for this heating
25 system and now have moved it back to next year; isn't

1 that right?

2 A. I'm not familiar with the exact
3 details of implementing fuel switching. I guess we
4 discussed that earlier with other intervenors that the
5 enabling legislation isn't passed yet. Bill 118 to my
6 knowledge at that time wasn't already passed, and I
7 don't know whether we have programs ready to go the day
8 it passes or only after it passes we get geared up. I
9 don't know.

10 Q. All right. Now, the same thing about
11 not losing an opportunity - I will come back to demand
12 management - the same thing about not losing an
13 opportunity.

14 Perhaps, Mr. Snelson, I think this was
15 you. Turn to Volume 149 of the transcript at page
16 26427, and there you are talking about the Manitoba
17 purchase.

18 One of the reasons you are giving why it
19 was wise to proceed with it was these sorts of
20 opportunities don't come along very often. That's one
21 of your key justifications for the Manitoba purchase;
22 right, you have to do it when it's available?

23 A. It's one of the factors with respect
24 to the Manitoba purchase, yes.

25 Q. Okay. Now, that would be analogous

1 to demand management or NUG opportunities; correct?

2 A. It is a question here, is there an
3 opportunity for a purchase, yes.

4 Q. You will agree; will you not, that
5 the Manitoba purchase exacerbates your surplus for a
6 period of years?

7 A. The years when the Manitoba purchase
8 starts are years when we forecast to have some surplus.

9 Q. If you were to get 2,000 megawatts of
10 demand management next year because you implement some
11 sort of program to seize the moment, that would have
12 the effect of aggravating --

13 THE CHAIRMAN: How many did you say.
14 2,000 did you say?

15 MR. SHEPHERD: 2,000.

16 Q. That would aggravate your surplus;
17 right?

18 MR. SNELSON: A. 2,000 megawatts of
19 demand management?

20 Q. Yes, electrical efficiency.

21 A. If there was nothing else, no other
22 change and it's kind of a rather wild hypothesis, but
23 yes, I presume it would add to surplus if it wasn't
24 just an advancement of 2,000 megawatts we were relying
25 upon.

1 Q. Well, the hypothesis is you are
2 seizing the moment of an economic recovery; right,
3 taking the opportunity that's there?

4 A. Well, it's your hypothesis and under
5 that hypothetical situation then, a large part of it
6 could very well be surplus.

7 Q. But then if that was available and
8 you didn't take it, is it correct that later when you
9 want it you are (a) likely to get less; and, (b) likely
10 to have to pay more for it; isn't that true?

11 A. Are we talking about the
12 opportunities for demand management in new construction
13 and new equipment--

14 Q. Yes.

15 A. --that is being addressed in strategy
16 element 3.5.2?

17 Q. Yes.

18 A. I think perhaps Mr. Shalaby would be
19 better to deal with that question.

20 MR. SHALABY: A. In general, yes.

21 Q. Okay. Now, I'm referring to both
22 demand management and non-utility generation - because
23 presumably the same thing applies with respect to
24 cogeneration; right, if you don't take the opportunity,
25 later it's going to be less and more expensive;

1 correct?

2 A. I think Mr. Snelson indicated that
3 there are ways of making provisions. Suppose a paper
4 company is replacing its boilers as you were saying,
5 they don't need to make an either/or decision, they can
6 replace it without cogeneration with provisions for
7 future cogeneration that reduces sort of the penalty of
8 not taking cogeneration right away.

9 My memory from that business is that you
10 just provide for a high pressure boiler, which isn't
11 significantly more expensive than a regular boiler, and
12 you provide space for generating equipment and sizing
13 of certain pipes and so on.

14 So there is a way of making the decision
15 not irreversible or making it possible at a future date
16 to put cogeneration without significant disruption in
17 the future.

18 Q. It still costs more money though;
19 right?

20 A. Possibly. But in my indication, it's
21 not analogous, for example, to a house. If you don't
22 insulate it right while it's being built it's a major,
23 major job to rip it all open and put major insulation.
24 It's not of the same nature.

25 So there are lost opportunities that are

1 really painful to regain, and there are lost
2 opportunities that are possible to regain without very
3 much extra cost or extra pain.

4 And, again, to talk about all of NUGs and
5 all of demand management with the same brush is
6 probably over simplification, but generally you would
7 incur more costs and capture less, but there are
8 opportunities that are possible to capture without too
9 much extra cost.

10 Q. Well, let's go back to our hospital
11 with the cogen chiller combination. Now, if for
12 whatever reason they can't do that now, let's say your
13 charge for back-up power is too high, I know this is a
14 hypothetical, let's just say, or for whatever reason
15 they don't think that Hydro wants them to do it right
16 now, can they choose the more conventional approach but
17 set it up so that at very little extra cost they have
18 the preferred package available to them later.

19 They can't; can they?

20 A. I don't know the details of that
21 particular technology and the barriers to implementing
22 it later. I am not familiar with that particular
23 situation.

24 Q. Okay. In 3.6.1 you talk about giving
25 a high priority to demand management R&D. Does it say

1 somewhere in this document that nuclear research should
2 also be given a high priority?

3 MR. SNELSON: A. I don't believe it
4 does.

5 Q. You are spending a great deal more on
6 new career research than demand management research?

7 A. We certainly spend a lot of money on
8 research projects that are to do with the continuing
9 operation of the nuclear system, yes.

10 Q. I thought I heard somebody say, and
11 maybe I'm just not remembering properly, that nuclear
12 R&D is some 10 or 20 times that of demand management
13 R&D. Is that about right?

14 A. It's larger. The order of magnitude
15 of 10 isn't out of the possibility.

16 Q. Okay. So your high priority on
17 demand management research. Truth is, Mr. Snelson,
18 isn't it that that is in your strategy principles
19 because that's what you had to say, but that's not what
20 you are really doing. Isn't that right?

21 [11:16 a.m.]

22 A. No.

23 Q. Well, is spending some small fraction
24 of your R&D budget on demand management research, is
25 that what you consider a high priority?

1 A. Well, this element refers to
2 technical research and market development.

3 Q. All right. So if you spend a lot of
4 money on market development, then you don't have to do
5 any R&D, or very little R&D, is that what you are
6 saying?

7 A. No. We do have a whole division of
8 the corporation in the energy management branch which
9 is in the main in the business of market development
10 and other such activities associated with developing
11 demand management programs.

12 Q. Okay. It doesn't do any R&D, does
13 it?

14 A. There is some R&D in addition which
15 is done through our research division. But this is
16 referring to the overall effort in that area. It's
17 not necessarily just what is done at the research
18 division on developing efficient light bulbs.

19 MR. SHALABY: A. I take you to page 22
20 of this same document, item 5.5.4, as an example.
21 It's not exhaustive. But in there you will find
22 something that reads,

23 Programs would be implemented to
24 assure the save economic service lives of
25 existing nuclear stations.

1 Q. Okay. We are actually going to come
2 back to --

3 A. That covers the expenditures to
4 assure the safe and economic performance of existing
5 stations.

6 Q. Okay.

7 A. Thank you.

8 DR. CONNELL: Perhaps I could just
9 intervene. It seems to me that in we are trying to
10 assess the commitment to 3.6, it might be more
11 meaningful to look at the growth rate rather than the
12 present level. I can't recall whether we have any
13 evidence as to the rate of growth of R&D in relation to
14 demand management. Does any panelist recall?

15 MR. SHALABY: I could undertake to look
16 through the interrogatory responses to see if there's
17 anything to that regard. Nothing comes to mind
18 immediately.

19 DR. CONNELL: That might be helpful.
20 Thank you.

21 MR. SHALABY: We also indicated in Panel
22 4, Dr. Connell, that the concept of leverage is very
23 much a strategy in demand management. Much of the
24 demand management research occurs, for example, at
25 Phillips or at General Electric or at companies that

1 manufacture the products. We are in partnership with
2 very many other R&D companies. So just looking at our
3 own research and development budget perhaps is not the
4 sole indicator of the commitment to demand management
5 research and product development.

6 MR. SNELSON: The sort of program that is
7 going on at Espanola where we are essentially working
8 with a community as part of either research or market
9 development, somewhere in that area of what can be
10 achieved with demand management. We have gone into
11 that community, and having a very large scale effort
12 with that community to see what can be achieved. And
13 it is in that spirit, I think, that is consistent with
14 that strategy.

15 MR. SHEPHERD: Q. Mr. Shalaby, just to
16 follow up with your comment about partnerships with
17 industry, you don't do that in nuclear, do you; not to
18 the same degree, anyway.

19 MR. SHALABY: A. We do it to some
20 extent, as well, yes.

21 Q. To the same degree or anywhere close?

22 A. The number of firms engaged in work
23 on the nuclear CANDU plants, and specifically on
24 Ontario is smaller than the number of firms
25 manufacturing air conditioning, lighting commitment,

1 motors throughout a larger spectrum of services.

2 Q. Of course, the biggest firm involved
3 is AECL, and you provide most of their R&D money
4 anyway, isn't that right?

5 A. I presume Panel 9 went into detail of
6 that. I can't add much more to what went on there.

7 Q. Okay. Just before I leave this,
8 could you turn to page 42, please, of this same
9 document. We are talking about research and market
10 demonstration. If you see in the third paragraph, the
11 one that starts "The technical research," this is the
12 rationale behind the strategy elements; correct?

13 A. Yes.

14 Q. Okay. And it says:

15 The technical research and market
16 demonstration programs must as a minimum
17 be designed to support the program
18 required to meet the most likely load
19 growth.

20 And you are doing that, right?

21 A. I believe so.

22 Q. Okay. It also says at the end of
23 that paragraph:

24 It would be prudent to perform
25 additional technical research and market

1 demonstrations so that additional
2 possibly higher cost demand management
3 programs are available to respond to
4 higher load growth.

5 Now, it's true that you are not doing
6 that, are you?

7 A. I think Panel 4 indicated that we
8 have a large number of programs under way but we also
9 have a large number of concepts being screened and at
10 times puts on one side until their time is more
11 appropriate to implement them.

12 So there is a large battery of demand
13 management programs that have been assessed and judged
14 not to be appropriate to proceed with right away. They
15 may need research. They may need product development.
16 They may need more market information. And they are
17 put on a different stream, if you like, to be readied
18 for a future date. So I think we are doing both of
19 those.

20 Q. Isn't it true that right now they are
21 actually not put in a different stream, they are put on
22 the shelf.

23 A. No, I don't agree to that.

24 Q. No, it is not true?

25 A. No. There are others that are put on

1 the shelf, sure. But there are many others that are
2 being worked on to make them market ready in a future
3 date.

4 Q. Okay. If you turn to the next page,
5 you have a heading there 3.10.

6 THE CHAIRMAN: "Next page" being?

7 MR. SHEPHERD: Page 19, sorry. I am back
8 to the main agenda here.

9 THE CHAIRMAN: Thank you.

10 MR. SHEPHERD: Page 19. The heading is
11 3.10, Rate Induced Demand Management, which I managed
12 to get confused yesterday.

13 Q. Should I take it from the principles
14 here that Ontario Hydro is opposed to increasing rates
15 in order to reduce demand or make electrical efficiency
16 measures more cost effective to consumers? Is that a
17 correct conclusion from these principles?

18 MR. SHALABY: A. Yes.

19 Q. Would that be true even if that
20 option were demonstrably, let's just hypothesize just
21 for a second, demonstrably the best for the environment
22 and would ultimately benefit your ratepayers overall?

23 A. Again, not getting too close to the
24 Power Corporation Act, I think within the constraints
25 that Hydro operates within, I think we need more policy

1 direction to go in that. I don't think we are
2 empowered to do that, just raise rates to control
3 demand. I don't think it's something we can do on our
4 own.

5 Q. Okay. Well, let's turn to page 44,
6 which is the rationale behind that. And you will see
7 about would two thirds of the way down a paragraph that
8 starts out "Major rate structure." Do you see that on
9 page 44? And it says, the first sentence there says:

10 Major rate structure changes are also
11 seen to require consensus among Hydro,
12 various customer groups, the Ontario
13 Energy Board, and the Provincial
14 government.

15 Is it fair to conclude from that, for
16 example, that you could not implement major rate
17 structure changes to promote demand management if, for
18 example, AMPCO and its members were opposed; is that
19 fair?

20 DR. LONG: A. I think it's something
21 that would definitely have to be discussed at the OEB
22 hearing. There are always a variety of views. So the
23 last set of structural changes that were introduced
24 over the last few years would see some consensus from
25 our two major customer groups.

1 Q. Which are MEA and AMPCO.

2 A. That is correct.

3 Q. Ontario Hydro currently believes the
4 time of use rates are a very important aspect of
5 managing demand, correct?

6 A. That's one element of our demand
7 management program, yes.

8 Q. And you wanted to introduce that
9 quite a number of years ago and got opposition from MEA
10 and AMPCO, correct?

11 A. I am not familiar with all the
12 details, but there were some implementation details
13 that there had to be worked out, yes.

14 Q. Isn't it true that Ontario Hydro, in
15 fact, entered into a formal agreement with those two
16 organizations to defer time of use rates, even though
17 believing them to be in the best interest of the
18 ratepayers, for five years pending an agreement with
19 those customer groups; isn't that correct?

20 A. If it is correct, I am not familiar
21 with it.

22 Q. Is anybody on the panel aware of that
23 agreement?

24 MR. SNELSON: A. I am not.

25 Q. Okay. You have said somewhere in

1 here that demand management incentive levels have to be
2 acceptable to the customers in general. That is one of
3 your principles, isn't it?

4 MR. SHALABY: A. It is.

5 Q. Yes. Here it is, 3.11.3. So I guess
6 in keeping with this sort of general theme, it's true
7 that if you get a strong objection from a significant
8 category of customers to a proposed incentive program,
9 let's say you want to spend a lot of money on electric
10 motors and AMPCO says, no, no, no, we are not going to
11 benefit enough from that, no, electric motor is a bad
12 example, compact fluorescents and AMPCO says or MEA
13 says, this is crazy, we don't want it, then that would
14 be a serious barrier to you implementing such a
15 program; is that correct? I am not saying that it
16 would prevent you entirely, but it would certainly be a
17 serious barrier.

18 A. I think if there is a general feeling
19 amongst our customers that the incentive levels are too
20 high, then programs would have to take that into
21 consideration either by adjusting them or --

22 Q. That's not the question. The
23 question is whether a particular customer class or
24 segment of your customers opposes the program,
25 notwithstanding that you believe it's in the best

1 interest of your customers. I take this to mean that
2 you might do it but you probably wouldn't.

3 A. I think we witnessed here in this
4 hearing these groups objecting to certain demand
5 management spending in different sectors and. It
6 obviously has not stopped us from implementing programs
7 in the various sectors. So I think one opinion from
8 one group about one program is not sufficient to put
9 the demand management initiatives on hold, no.

10 THE CHAIRMAN: There's extensive evidence
11 in Panel 4 about the inequity situation in demand
12 management and how Hydro tried to resolve that. I
13 think we went into it in quite a bit of detail. And
14 the general proposition is that they try and broad base
15 it as much as possible so that they reduce the inequity
16 but it can never be completely eliminated.

17 MR. SHEPHERD: Mr. Chairman, this might
18 be an appropriate time for a break.

19 THE REGISTRAR: Please come to order.
20 The hearing will recess for 15 minutes.

21 ---Luncheon recess at 11:28 a.m.

22 ---On resuming at 11:50 a.m.

23 THE REGISTRAR: Please come to order.
24 This hearing is again in session. Be seated, please.

25 MR. SHALABY: If I may respond to Dr.

1 Connell's undertaking. There is an Interrogatory No.
2 11.7.5 that indicates research and development effort
3 in various business area like nuclear, pulverized coal,
4 hydroelectric, IGCC, wind, photovoltaic and other new
5 technologies, as well as utilization which is most of
6 the demand management options, and it indicates the R&D
7 costs starting in 1983 and giving them for every year
8 projecting all the way to 1996.

9 And, as an example, for the demand
10 management area the expenditures in 1983 were \$2
11 million and they are projected to be \$63 million in
12 1996.

13 THE CHAIRMAN: And that's 11.7.5. It
14 should get a number.

15 THE REGISTRAR: That will be 683.20.

16 THE CHAIRMAN: Thank you.

17 ---EXHIBIT NO. 683.20: Interrogatory No. 11.7.5.

18 DR. CONNELL: Thank you.

19 THE CHAIRMAN: Mr. Shepherd.

20 MR. SHEPHERD: Thank you, Mr. Chairman.

21 Q. I think this is probably for you, Dr.
22 Long. If you look at page 44 of Exhibit 74, please.

23 MR. LONG: A. Yes, I have that.

24 Q. In the second last paragraph it says:

25 One of the important principles...,

1 this is to do with rates:

2 One of the important principles is
3 that fairness is achieved by allocating
4 costs to customers on the basis of cost
5 causality.

6 And I understand that there's some
7 description there. Perhaps you could give us a brief
8 description of what cost causality is?

9 A. Well, as it indicates there, it's
10 something that's related to the principle of fairness.
11 If a customer group results in the corporation
12 incurring certain costs, then according to the
13 principle their rates should reflect those costs.

14 Q. And that applies to demand management
15 expenditures?

16 A. Being able to track cost causality
17 for individual customers or individual groups of
18 customers, is not something that we apply to all cost
19 categories because many cost categories are for the
20 benefit of all customers, and the best example of that
21 is generation, and demand management expenditures fall
22 into that same category.

23 Q. So the principle of cost causality
24 then is not applied to demand management; is that
25 correct?

1 A. I think demand management benefits
2 and costs are within the limits of the fairness as
3 recently described by the chairman. Those costs and
4 benefits are available for all customers, all customer
5 groups and, therefore, they are treated as what's
6 called within Hydro a common cost.

7 Q. Could you turn to page 47 then,
8 please, and here you are talking about the nature of
9 energy saving options, and particularly you are talking
10 about whether the utility should be prepared to pay the
11 full cost of the energy saving option, just as it would
12 have paid the full cost of the energy production
13 option.

14 And the first reason you give why that is
15 inappropriate is:

16 Energy savings and energy
17 production options are different from a
18 financial point of view.

19 And you go on to explain that, where you
20 say at the end of that bullet:

21 Full grants can result in higher
22 electricity prices.

23 This sounds - and I understand that this
24 applies only to full grants - but this sounds like
25 something akin to sort of a no loser's test. Am I

1 misunderstanding that, you are saying you can't do it
2 because it increases prices?

3 MR. SHALABY: A. I think the two bullets
4 after that support that by saying, it's not even
5 necessary in most cases.

6 Q. Understood.

7 A. That's another strong argument for --
8 we are unlikely to be faced with a requirement to pay
9 the full shot on all options. There are options where
10 we do pay the full shot, but we expect that most of the
11 programs would require quite a bit less than the full
12 cost. That's an added reason and a strong one.

13 Q. Well, sorry, is the fact that full
14 grants can result in higher electricity prices, is that
15 a reason not to do it, or not?

16 A. No.

17 Q. It isn't a reason. It says:

18 There are a number of reasons why
19 full grants should not be made.

20 And the first one I list is full grants
21 can result in higher electricity prices. That's one of
22 the reasons why you don't do it; right?

23 A. If it is not needed you don't do it
24 because it results in higher electricity prices. If
25 you can do the same program with comparable

1 effectiveness without paying the full cost, then that
2 is preferable to paying the full cost.

3 Q. No. But, Mr. Shalaby, if you don't
4 need to pay the full cost you are not going to anyway
5 and it doesn't matter whether it increases prices;
6 right?

7 A. Well, Panel 4 indicated that we found
8 that in some programs we had to pay the full cost. So,
9 again, because of the diversity of the programs and
10 because there are very large number of market segments
11 and products, I think the example mentioned was the
12 water heater blankets, for example, or the shower
13 exchange in the commercial market, we paid the full
14 line. That was the most effective way seen to deliver
15 that program.

16 Q. What I get from what you are saying -
17 and tell me whether I'm just misunderstanding - what I
18 get from what you are saying is, that within the total
19 customer cost test you pay whatever is necessary to
20 accomplish the result, and the fact that it impacts on
21 electricity prices is not a relevant consideration;
22 fair?

23 A. It is relevant but not a deterrent
24 from implementing demand management, within reason. We
25 say it has to be acceptable. This is where incentives

1 have to be acceptable to all customers in general. It
2 comes in a way through the impact on their electricity
3 rates.

4 If customers find that their electricity
5 rates are going far too high because of incentives,
6 they may voice their concern about that.

7 [11:55 a.m.]

8 Q. So you have to make sort of a
9 judgment call in any given, with respect to any given
10 program as to whether its rate impact is important
11 enough to stop you, or not, right?

12 A. Yes.

13 Q. And that judgment call is based on
14 your perception of customer acceptance; is that right?

15 A. And the rate impact, itself.
16 Typically, any single program would have a negligible
17 rate impact, less than a fraction of a per cent. And
18 if we perceive equity in having the broad-based
19 programs, then that's another factor for accepting the
20 rate impact of demand management.

21 So this judgment as to the magnitude of
22 the rate impact, is it necessary to implement the
23 program, or not, and is it perceived to be equitable
24 because of the broad-based nature of the programs.

25 Q. But surely the rate impact doesn't

1 have any importance in and of itself. It only has
2 importance in terms of customer acceptance and the
3 impact of the economy and things like that. The fact
4 that your rate increase is 8.6 per cent or 10.5 per
5 cent next year is not important in and of itself, is
6 it?

7 A. It is important for the factors you
8 mentioned, impact on the economy and customer
9 acceptance.

10 Q. But then for each proposed demand
11 management program, the effects are so small that you
12 couldn't consider them, is that what you have said?

13 A. They calculate them. All I am saying
14 is, our experience so far is that the effect on rates
15 has not been a deterrent to the implementation of
16 demand management so far. The way they are being
17 implemented and the extent of incentives in general as
18 a total has been seen to be acceptable so far.

19 Q. Would it be fair to be characterize
20 your evidence as rate impacts have not influenced
21 demand management programs to date and you do not
22 expect them to, but it is conceivable that they could.

23 DR. LONG: A. I think rate impacts, as
24 Mr. Shalaby has indicated, for the program as a whole
25 is something that the corporation would constantly keep

1 in mind. And it is one of those tradeoffs that has to
2 be made with respect to the benefits of the program.
3 So it will continue to be looked at both now and in the
4 future.

5 Q. Okay. So, if I understand the total
6 customer cost test correctly, there is a reduction in
7 the cost of energy services to your customers overall
8 with any program or package of programs, annual set of
9 programs, that meet the total customer cost test, is
10 that true?

11 MR. SHALABY: A. In the long-term that
12 is correct. There are year-by-year impacts that are
13 different. It could be in the long-term there is a
14 reduction in total customer cost, yes, but in the
15 short-term, there could be an increasing cost.

16 Q. It's a rate shock, in effect.

17 A. A rate shock. And there are
18 judgments to be made on whether the long-term savings
19 justify the short-term rate shock. We make those
20 decisions continuously.

21 Q. And that is essentially the same
22 decision you make when you bring a big capital asset
23 in-service, right, the rate shock is an important
24 consideration.

25 A. Yes. And, indeed, non-utility

1 generation programs, as well.

2 Q. Well, we will get to that. But, yes,
3 there is an impact there, too, as well, right?

4 A. Yes.

5 Q. It is true, though, that demand
6 management programs, the rate impact, no matter how
7 much you pay for the sort of demand management you are
8 expecting --

9 A. No, I don't think we are saying no
10 matter how much. I think the programs have been
11 designed in a way and the programs that have made it
12 have been judged to be acceptable in their totality,
13 including their impact on rates.

14 THE CHAIRMAN: I think we are straying
15 away in this line from what we should be here to do,
16 and that is discuss planning strategies in practice and
17 getting back to all the details of Panel 4. I think
18 you should and minimize that as much as you can.

19 MR. SHEPHERD: Mr. Chairman, I am just
20 taking this to a planning point which I will get to
21 quite shortly.

22 THE CHAIRMAN: Quite shortly, I hope.

23 MR. SHEPHERD: Q. It is true, isn't it,
24 Mr. Shalaby, that there is no reasonable likelihood
25 that demand management options will have anywhere near

1 the rate shock implications within the total customer
2 cost test that bringing capital assets on stream have;
3 isn't that right? Isn't that just math?

4 DR. LONG: A. Well, I think the
5 megawatts, or the equivalent megawatts from the demand
6 management program grow much more slowly over time. I
7 mean, when you are bringing in a major supply option
8 such as a nuclear unit, you are bringing in a lot of
9 megawatts all at once. And it is natural that you will
10 get a much larger impact from that than you would from
11 something that grows gradually over time.

12 Q. Also, isn't it true that your demand
13 management program doesn't have anywhere near the
14 capital intensity that nuclear, for example, has?

15 A. That is true, but that is not the
16 only characteristic of demand management programs that
17 affect their impact on rates. If you go back to my
18 direct testimony, there were, I believe, two or three
19 factors that I mentioned that result in the impact of
20 demand management on rates.

21 Q. Let's turn to non-utility generation
22 then. And I take it from your direct evidence that
23 your Panel 5 evidence is changed in some significant
24 respects due to the DSP Update, is that a fair
25 statement?

1 MR. SNELSON: A. There are some changes.
2 I don't consider them to be very large.

3 Q. Well, Panel 5 did say that it is your
4 anticipation that you will have 3,100 megawatts of NUGs
5 by the year 2000. You expect to get that.

6 A. Yes.

7 Q. Isn't that what their evidence was?
8 And you are not presenting any plans to this Board
9 containing that expectation, are you?

10 A. The unmanaged surplus cases do
11 contain that expectation.

12 Q. But you specifically told this Board
13 that is not what you are going to do; you are not going
14 to manage the surplus.

15 A. We intend to manage the surplus, yes.

16 Q. And, in fact, as a result, the plans
17 that you have told this Board you are going to proceed
18 with contain 1,516 megawatts of NUGs, don't they?
19 Isn't that the number by the year 2000?

20 MR. DALZIEL: A. That sounds about the
21 right number.

22 Q. Okay. The rest is now there if you
23 need it, right?

24 MR. SNELSON: A. Yes. And the 1,500 or
25 1,600 megawatt number is illustrative.

1 Q. Okay. I hate doing this mathematical
2 calculation, but I think we have to. As of April 16,
3 1992, it is correct, isn't it, that Ontario Hydro had
4 in purchase NUGs, according to the definition used in
5 your evidence here, 401 megawatts in-service, 242
6 megawatts committed, and 666 megawatts formerly
7 approved and binding on the utility, totalling 1,309
8 megawatts.

9 Will you accept subject to check that
10 those are correct?

11 A. We think those are probably close to
12 being correct, but I am not sure precisely what the
13 source of those numbers are.

14 Q. I called your NUG division, actually.
15 Will you undertake to advise the Board if those numbers
16 are incorrect?

17 A. Yes.

18 Q. Now, just by my math, if I deduct
19 1,309 megawatts from 1,516 megawatts I get 207
20 megawatts, which seems about right; correct?

21 A. Yes.

22 Q. Your evidence is that you currently
23 have 13 projects, totalling 1,625 megawatts which are
24 currently being renegotiated; is that correct?

25 A. Yes.

1 Q. And, in fact, will you confirm that
2 since the beginning of January, you have made formal
3 offers on some of those projects totalling about 700
4 megawatts, is that correct?

5 A. I don't know that for sure.

6 Q. Will you undertake to provide that
7 information?

8 A. Yes.

9 Q. Thank you. Assuming that's correct
10 for the time being --

11 THE CHAIRMAN: What are the formal offers
12 for, did you say?

13 MR. SHEPHERD: These are formal offers on
14 some of the renegotiated projects totalling 700
15 megawatts.

16 THE CHAIRMAN: Do you want an undertaking
17 number?

18 MR. SHEPHERD: Oh, yes. I'm sorry.

19 THE REGISTRAR: 684.20.

20 ---UNDERTAKING NO. 684.20: Ontario Hydro undertakes to
21 provide information confirming that since
22 the beginning of January, Ontario Hydro
23 has made formal offers on some of 13
24 projects being negotiated for a total of
25 700 megawatts.

24 MR. SHEPHERD: Q. So by my math, that
25 brings you over 2000 megawatts. Assuming that that

1 were true, then the illustrative plans right now are
2 known to be, to understate the NUG component; correct?

3 MR. SNELSON: A. My understanding is
4 that the NUG component is likely to exceed the amount
5 that is in the illustrated plans based on the latest
6 information.

7 Q. You will be providing this Board
8 presumably with new charts that show what you expect
9 the real numbers to be, is that true?

10 MR. SHALABY: A. I think Exhibit
11 322.21--

12 Q. Yes.

13 A. --gives information in that regard.

14 Q. Well, yes. But also your Panel 10
15 witness statement, I believe, has a whole chart of how
16 many NUGs each year in your managed surplus plans,
17 right?

18 A. That was the simulations that were
19 put into the formulation of the cases that we analyzed.
20 But this 322.21 is an update to the NUG plan. The 1991
21 plan is the undertaking that this is in response to.

22 And it gives an attachment to the
23 short-term non-utility generation plan, and it supports
24 what both you and Mr. Snelson are saying, that in the
25 short term we see numbers that would exceed 1,600

1 megawatts as a best guess at this time, how that
2 changes. Also, the documents indicate subject to the
3 outcome of negotiations and other things, these numbers
4 may change. But as a best guess, attachment 2 has some
5 numbers in there.

6 Q. Now, I understood from your Panel 5
7 evidence, and I think that you have said in your direct
8 evidence here that this still is the case, that you
9 have shifted your emphasis now from sort of all NUGs to
10 preferred NUGs, and you are trying not to take major
11 supply NUGs but rather preferred NUGs when you can,
12 right?

13 MR. SNELSON: A. That was our evidence
14 in Panel 5.

15 Q. Is that still the case?

16 A. That is still the case.

17 Q. It is true, though, isn't it --
18 sorry. If you will turn to transcript Volume 148 and
19 look at page 26137. You say, I think this is you, Mr.
20 Snelson, you say, starting at line 9,

21 We will be discussing in our
22 discussion of illustrative surplus
23 management how the NUG program may be cut
24 back or delayed to reduce the surplus,
25 and such cutbacks would be focussed on

1 the major supply NUG part of the program
2 in the main.

3 Is that still your position?

4 A. Yes.

5 Q. It's true, though, isn't it, that the
6 700, well, you may not be able to answer this, in which
7 case I'll add it to the undertaking. It's true, isn't
8 it, that of the 700 megawatts of offers you have made
9 in the last 5 months, over 80 per cent have been major
10 supply NUGs, isn't that correct?

11 A. I am not familiar with that
12 information.

13 Q. Will you add it to the undertaking,
14 then, please?

15 A. Yes.

16 Q. The undertaking may be subject to
17 whatever commercial confidentiality considerations
18 might apply. I am not sure whether any of this
19 information is considered to be commercially
20 confidential.

21 Q. All I want is a total. Major supply
22 NUGs, non-major supply NUGs, total.

23 A. I would expect that that would not
24 apply, but I'm just giving that caution. I don't know
25 whether the people who have this information consider

1 it to be confidential in any way.

2 [12:12 p.m.]

3 Q. Okay. Let's deal with it if it
4 becomes a problem. Your current policy is to take all
5 under 5 megawatt projects and all hydraulic NUGs
6 regardless of size; correct?

7 A. Yes.

8 Q. But it's true that you have already
9 made an internal determination that that will only
10 remain your policy as long as you don't get very much,
11 isn't that right? So a formal determination has been
12 made of that nature; isn't that correct?

13 A. Not to my knowledge.

14 Q. Will you endeavour to find out for
15 us?

16 THE CHAIRMAN: Well that's pretty
17 indefinite. As long as you don't get very much, what
18 do you mean by that?

19 MR. SHEPHERD: I'm referring, Mr.
20 Chairman, to a formal decision having been made by
21 Ontario Hydro and approved by management that says that
22 that policy will continue in force as long as the
23 uptake is minimal.

24 THE CHAIRMAN: And what do you mean by
25 minimal?

1 MR. SHEPHERD: Well, I don't know what
2 the exact words are in the policy and I assume that if
3 Mr. Snelson finds it he will be able to recognize it.

4 THE CHAIRMAN: Do you have the policy.

5 MR. SHEPHERD: No, I do not. If I did I
6 would just file it. So will you undertake to determine
7 whether such a decision has been made?

8 THE CHAIRMAN: Well, his answer is that
9 he's not aware of it and if he becomes aware of it he
10 will let you know.

11 MR. SHEPHERD: Well Mr. Chairman, the
12 person who could answer that was a witness eight months
13 ago and I can't ask him that question again.

14 I thought one of the things we would be
15 doing in Panel 10 is...

16 THE CHAIRMAN: Well he's going to find
17 out if there is such a thing, and if he does, if there
18 is such a thing he will let you know.

19 MR. SHEPHERD: Okay. So then I'm asking
20 for an undertaking.

21 THE CHAIRMAN: And if there isn't, he
22 will say there isn't. Is that fair.

23 MR. SNELSON: That is fair.

24 THE CHAIRMAN: Give it an undertaking
25 number.

1 THE REGISTRAR: 684.21.

2 ---UNDERTAKING NO. 684.21: Ontario Hydro undertakes to
3 provide whether there has been a
4 determination that Ontario Hydro will
5 take all under 5 megawatt projects and
6 all hydraulic NUGs regardless of size.

7 MR. SHEPHERD: Q. Mr. Shalaby, you
8 talked about - I don't know how to describe it - people
9 making decisions today, not putting in cogeneration
10 immediately but sort of keeping ready for it, if you
11 like. Do you recall that a few minutes ago?

12 MR. SHALABY: A. Yes.

13 Q. Would you please describe the nature
14 and status of the cogeneration deferment program.

15 A. I am not familiar with a specific
16 program like that.

17 Q. Have you at any time had knowledge of
18 any proposed program, plan or initiative within Ontario
19 Hydro - I'm reading because I want to be careful here -
20 that whatever its name, was at any time referred to, to
21 your knowledge, as the cogeneration deferment program.

22 A. No.

23 Q. Have you been involved in any
24 discussions at Ontario Hydro relating to the creation
25 of a program to defer the implementation of
cogeneration?

A. No.

1 Q. Have you been involved in any
2 discussions at Ontario Hydro with respect to a program
3 to defer the implementation of demand management?

4 A. No.

5 Q. Let me come back to Exhibit 74 and
6 perhaps you can turn to page 20. And I am not going to
7 go through the first three things under non-utility
8 generation, we have already done those into oblivion,
9 but let's deal with 4.1.4. As I read that it says:

10 The standard rates for hydroelectric
11 or other renewable sources will be set
12 at full avoided cost.

13 That is still your policy?

14 MR. SNELSON: A. I believe so.

15 Q. Now you have tabled new system
16 incremental costs in March; correct?

17 MR. SHALABY: A. Yes. They were
18 produced in March, I don't know when we tabled them.

19 Q. Well, whatever.

20 A. I also want to be careful.

21 Q. Will you look at Volume 149, page
22 26376, please.

23 You are being asked - I think this is
24 you, Mr. Shalaby - you were being asked whether there
25 are changes in your avoided cost calculations, your

1 methodology, since Panel 3, and you say, no, we are
2 doing it the same way with one exception.

3 And you say that you no longer do three
4 calculations upper, median and low load forecast and
5 then blend them to get a single number. Now, why is
6 that, why don't you do that any more?

7 A. I think that is indicated towards the
8 bottom part of my answer and it reads;

9 Our experience to date has shown us
10 that the median resulted in information
11 that is very much similar to the
12 expected, so we restricted the
13 calculation this time to just median
14 values.

15 Q. So I assume that means that the
16 distribution of each of your component costs around the
17 median is symmetrical; is that correct, that is upper,
18 median and low --

19 A. Not necessarily, no. What I'm saying
20 is when we went through that exercise before the
21 difference between median value and expected value was
22 not significant.

23 Q. It was 3 per cent; wasn't it?

24 A. If you worked it out once, then...

25 Q. Well, no, didn't you reply to an

1 undertaking saying it was 3 per cent?

2 A. If we did, then I'll accept that,
3 yes.

4 Q. So presumably the effect of not doing
5 this any more is to drop your avoided cost by 3 per
6 cent; is that right?

7 A. Was the expected higher than the
8 median.

9 Q. Yes.

10 A. In all cases or in one particular
11 case?

12 Q. It was your number.

13 A. Well, maybe you can bring that
14 undertaking up, because I would expect it to swing from
15 one side to the other, depending on the time, how many
16 years you take the calculation to, and whether it's a
17 high capacity factor or low capacity factor option.

18 I would be surprised that it would be a
19 universal conclusion like that.

20 Q. Well, generally speaking, your future
21 system costs, if you look at future system costs in
22 sort of a long-term way. Isn't it true that your unit
23 price of electricity is generally higher in upper load
24 growth than lower load growth?

25 A. Yes.

1 Q. Sorry, higher relative to the median.
2 The difference between median and upper is greater than
3 the difference between median and lower, generally, in
4 the long term?

5 A. Towards the long term really things
6 come together again because you have a large distance,
7 to adjust your system and come back again.

8 Most of the deviation, in my experience,
9 occurs in the short and mid term rather than in the
10 long term, because you can implement options and
11 correct whatever imbalances that have occurred and you
12 couldn't react quickly enough to correct.

13 So towards the long term I would expect
14 that most values would congregate in a narrow band.

15 Q. No, I guess what I'm asking about is
16 a long period of time as opposed to the avoided cost in
17 year 2010.

18 Over a long period of time, isn't it true
19 that if you net present value all your avoided cost,
20 you will have an asymmetrical distribution that is
21 higher on the upper side, generally?

22 A. I can't say that with certainty.
23 Perhaps you can do some number checking on that.

24 Q. You have just announced your new
25 standard rates for under 5 megawatt projects, right, a

1 couple of weeks ago?

2 A. If they have been announced only two
3 weeks ago, you know where I was two weeks ago.

4 Q. I'm going to file another exhibit
5 then to simplify this.

6 THE REGISTRAR: No. 702.

7 MR. SNELSON: This may already be Exhibit
8 689.

9 MR. SHEPHERD: Well, not all of it is,
10 I'm sure. Some of it we prepared.

11 MR. SNELSON: Oh.

12 THE CHAIRMAN: Sorry, six -- what did you
13 say, Mr. Snelson?

14 MR. SNELSON: According to my notes,
15 Exhibit 689 was the NUG Power Purchase Rates of May
16 14th, 1992.

17 MR. SHEPHERD: It simplified this
18 enormously.

19 ---EXHIBIT NO. 702: Four-page document of NUG rate
20 comparisons.

21 THE CHAIRMAN: What part of this
22 document, Mr. Snelson, 702 is Hydro generated material?

23 MR. HOWARD: Just checking, Mr. Chairman.

24 MR. SHEPHERD: Mr. Chairman, I can advise
25 you that the first page of it is from Hydro and pages

1 2, 3 and 4 are prepared by IPPSO.

2 THE CHAIRMAN: All right, thank you.

3 MR. HOWARD: Mr. Chairman, I should also
4 indicate that the first page of the document filed by
5 my friend is one page of a three-page document, so...

6 THE CHAIRMAN: Maybe we should have the
7 three-page document that's been filed as an exhibit.

8 MR. HOWARD: It's Exhibit 689.

9 THE CHAIRMAN: All right. It's all
10 right, you can proceed, Mr. Shepherd.

11 MR. SHEPHERD: Thank you, Mr. Chairman.
12 Sorry, I missed 689. I guess I just wasn't following
13 the exhibits closely enough. It was last week, I
14 guess.

15 Q. Now, to clarify, Mr. Snelson, your
16 current policy is that with a few exceptions only under
17 5 megawatt projects will be accepted by Ontario Hydro;
18 right?

19 MR. SNELSON: A. I believe we are also
20 accepting hydraulic projects that are more than 5
21 megawatts.

22 Q. That's the exception; right?

23 A. I think the phrases that are used are
24 hydraulic and certain special projects.

25 Q. But in the main, the new stuff you

1 are taking is under 5 megawatt; right?

2 A. That is the new proposals that we are
3 accepting. As you pointed out, there's a large number
4 of megawatts that are contracted for or in-service or
5 otherwise close to being committed which are mostly
6 much more than 5 megawatts.

7 Q. The 1992 published rates then, these
8 are for under 5 megawatt projects; correct?

9 A. These rates are for under 5 megawatt
10 projects.

11 Q. Now, if you will turn to the second
12 page, will you confirm - I don't know who this is
13 addressed to - will you confirm that this is the
14 correct way of calculating the average of your rates?

15 Don't worry about the percentages
16 increase and decrease for now, we will get to those.

17 A. The calculation appears to be the
18 rate in cents per kilowatthour in each time period
19 times the number of hours, which I presume is the
20 number of hours in that time period, to give a total
21 dollar amount, and then to sum that over time periods.
22 And that would be correct for something that delivered
23 power continuously.

24 Q. Okay. That's a base load situation;
25 right?

1 A. A base load situation. Actually
2 something that does deliver power continuously, because
3 base load does cover a range that is something less
4 than continuous.

5 Q. Okay. Would you accept, subject to
6 check, that the percentage decreases listed here
7 relative to your 1991 NUG published rates are correct.
8 These are average percentage decreases. Can you
9 confirm that those are correct, subject to check?

10 A. I haven't got the information here
11 that would enable me to make that check, so I have no
12 information to base it on as to whether those numbers
13 are correct or not.

14 Q. Okay. Will you undertake to provide
15 that then?

16 MR. HOWARD: Well, perhaps if my friend
17 would produce for us what he has used as the 1991 rates
18 it will be a little bit easier to do it and a little
19 bit more expeditious and we can find out whether he's
20 got the right 1991 rates. It's an arithmetic
21 calculation. He must have them because somebody's
22 calculated it.

23 MR. SHEPHERD: I mean, I could do all the
24 math here in front of the Board, Mr. Chairman.

25 THE CHAIRMAN: No, no. All he wants are

1 the 1991 rates.

2 MR. SHEPHERD: Well, it's a chart the
3 same as this.

4 THE CHAIRMAN: Well, I take it there's a
5 comparison in the first one between 4.5.1 and some
6 other -- a number; is that right?

7 MR. SHEPHERD: Yes.

8 THE CHAIRMAN: Well, perhaps you could
9 give us those three numbers.

10 MR. SHEPHERD: I will have to check what
11 they are, but sure, no problem. This is published
12 material, Mr. Chairman. It's all over the place.

13 THE CHAIRMAN: Well, I take it that
14 there's no quarrel with the methodology; that is, you
15 weight the rates and add them up and take an average
16 and that's a good way of analyzing what's happened to
17 avoided cost.

18 MR. SNELSON: That is a reasonable way of
19 analyzing, and it is absolutely correct for something
20 that delivers power continuously.

21 THE CHAIRMAN: Yes.

22 MR. SHEPHERD: Q. It is true; isn't it,
23 Mr. Snelson, that the '92 published rates are, on
24 average, lower than the '91 published rates; correct?

25 MR. SNELSON: A. I'm not sure of that.

1 These have been produced quite recently. We did give
2 some indications of the changes in avoided cost with
3 different versions of system incremental costs in
4 attachment H to Exhibit 646.

5 Q. Yes?

6 A. I haven't done this particular
7 comparison.

8 Q. I had here somewhere that you had
9 shown a drop from 4.2 to 4.0 cents in avoided cost for
10 an 80 per cent capacity factor NUG. Maybe that's
11 Exhibit 682, I think.

12 Yes, at page 75 of Exhibit 682.

13 A. That is the same table as the one I
14 was referring to in Exhibit 646. It's in both
15 exhibits.

16 Q. Okay. Now, this actually shows your
17 avoided costs going up from February, '91 to March,
18 '92; doesn't it, for all of the NUG options?

19 [12:32 p.m.]

20 MR. SHALABY: A. It has, yes, for the
21 project appraisals. For the planning, they are going
22 down.

23 Q. For the planning they are going down,
24 yes, of course. But for the project appraisal they are
25 going up. Now, you base your published rates on

1 avoided costs; correct?

2 MR. SNELSON: A. Our published rates are
3 based on the system incremental cost tables that are
4 used to calculate avoided cost, yes.

5 Q. The published rates that we have here
6 are based on Exhibit 592, correct, March, 1992, avoided
7 costs?

8 A. I believe so.

9 Q. And the published rates from 1991
10 would have been based on Exhibit 175, the February 1,
11 1991 avoided costs, correct?

12 A. My recollection is that the rates
13 were set in November or December, 1990, for 1991. But
14 that is a faint recollection.

15 Q. Sorry. I thought they were set in
16 April. You will correct that if you find out
17 differently?

18 A. If I am wrong in that regard, I will
19 advise you.

20 Q. Yes, of course.

21 A. And when you set the published rates,
22 you use the project appraisal values, correct?

23 A. I believe so.

24 Q. Okay. So, then, if we look at this
25 page 75 of Exhibit 682, we see that whether you use the

1 August, 1990, avoided costs or the February, 1991,
2 avoided costs, the March, 1992, avoided costs are
3 higher.

4 A. For an 80 per cent AECF non-utility
5 generator coming into service for a 20-year life
6 starting in 1994, as defined in the notes at the
7 bottom.

8 Q. Okay. So if the avoided costs are
9 higher, presumably you will be able to tell me that the
10 rates are higher, too. That should follow, right?

11 A. If they were evaluated in the same
12 time period and under the same method, yes.

13 Q. Okay.

14 MR. SHALABY: A. The rates are likely to
15 include the years prior to 1994, as well, which are not
16 part of this calculation.

17 Q. Okay.

18 A. That may swing it slightly the other
19 way.

20 Q. All right. Now, I think you
21 testified, Mr. Shalaby, that the new avoided costs
22 show, and maybe you didn't testify but perhaps you can
23 confirm whether this is true, that the change from the
24 1991 to the 1992 SICs is a lower short-term, the new
25 numbers are lower than the old numbers.

1 A. That is correct.

2 Q. And a higher long-term.

3 A. Correct.

4 Q. I think you testified that the result
5 of that in the case of a shorter term project, like a
6 20-year project, the one you have modelled here, would
7 be typically, the short term will have more influence
8 than that the long term because it is a shorter-term
9 project.

10 A. That's correct.

11 Q. In a longer-term project, and I
12 believe you gave the example of Niagara on this same
13 chart, which you model at 90 years, in a longer-term
14 project, the effect is that the increases in the longer
15 term become more important then avoided cost goes up.

16 A. That is correct.

17 Q. So it's always a balancing act,
18 right?

19 A. It is a safe statement to agree to,
20 yes.

21 Q. But in its judgment, right? Now, to
22 make the calculation for published rates, you have to
23 presumably model some sort of project to see what the
24 avoided costs mean in the real world, right?

25 A. Yes.

1 Q. And the project you model has a near
2 term in-service date and a 20-year life, isn't that
3 right?

4 A. I am not familiar with the latest
5 methodology for rate calculation. I don't know whether
6 that was explored in Panel 5.

7 Q. It was not. Does anybody know
8 whether that is the model that is used?

9 MR. SNELSON: A. I'm afraid I am not
10 familiar with the details of how they have gone from
11 system incremental costs to the published rate.

12 Q. Is that information you can provide
13 us?

14 MR. HOWARD: Mr. Chairman, surely this is
15 cross-examination that should have occurred when the
16 NUG panel was here. We are now in the beginning of
17 June, 1992, and we are having cross-examination about
18 rates for NUGs. This surely isn't --

19 MR. SHEPHERD: Mr. Chairman, I am
20 attempting to challenge whether, in fact, they pay full
21 avoided costs for preferred options. I have not been
22 in a position to challenge that before because I never
23 had a set of published rates that appeared to diverge
24 from avoided costs. I do today. I couldn't have asked
25 these questions in Panel 5 because Panel 5 was last

1 fall. So I am treating this in the nature of an update
2 of information based on more recent data filed by
3 Ontario Hydro.

4 MR. HOWARD: Mr. Chairman, I do not know
5 how my friend can make that proposition. He created an
6 exhibit, which is filed. He doesn't tell us the source
7 of the 1991 numbers in it. He doesn't tell us the
8 source of the 1989, 1990 numbers in it, and how anybody
9 can check to see whether that is accurate and whether
10 my friend's conclusions are accurate, I am sure I don't
11 know. And these witness certainly can't do it off the
12 top of their head. But if my friend is going to file
13 what he calls the march of buy-back rates, he better
14 tell us what rates he used to make his pretty pictures
15 with. Somebody will have to check it.

16 MR. SHEPHERD: Fine, and I will be happy
17 to do that. But I am not asking questions about that
18 right now, am I, Mr. Howard?

19 MR. HOWARD: I thought you were asking
20 questions about 1991 rates.

21 MR. SHEPHERD: I'm asking about the
22 change between 1991 rates and 1992 rates.

23 THE CHAIRMAN: I've lost track of what it
24 is you are asking Mr. Snelson about. What is it you
25 want to know from Mr. Snelson?

1 MR. SHEPHERD: The question I have put to
2 him is, Mr. Shalaby has agreed that in order to
3 translate avoided costs into published rates, you must
4 model a hypothetical NUG. I am asking what are the
5 characteristics of that hypothetical NUG.

6 And I have put to Mr. Snelson that it is
7 a near term in-service date and a 20-year life. He may
8 not be able to answer it, in which case I will ask him
9 to undertake to provide that. It should be relatively
10 simple for him to advise how they get from one number
11 to another.

12 THE CHAIRMAN: Can you help Mr. Shepherd
13 on this?

14 MR. SNELSON: Certainly, I don't have
15 here the steps that are gone through from going from
16 system incremental costs to developing the actual rate.
17 Those steps, however, do exist, and it would be
18 possible to find them.

19 THE CHAIRMAN: Well, was that not dealt
20 with in Panel 5 how this was done?

21 MR. SNELSON: Certainly Panel 5, there
22 was available for discussion the rates that were in use
23 at that time. And as far as I know, the methods of
24 going from incremental costs to published rates are the
25 same now as they were then. So that it would have been

1 possible to question them on that, perhaps, in Panel 5
2 with respect to methodology, even though the numbers
3 have changed.

4 THE CHAIRMAN: But your recollection is
5 it wasn't dealt with in Panel 5. And I don't want to
6 hold you to that.

7 MR. SNELSON: Panel 5 went on for quite
8 awhile and I can't recall everything that happened at
9 that time.

10 THE CHAIRMAN: To my recollection, almost
11 every conceivable matter was dealt with, but I couldn't
12 say that it was or was not. Was it, Mr. Shepherd?

13 MR. SHEPHERD: I certainly didn't ask
14 anything about it.

15 MR. HOWARD: Don't know.

16 MR. SHEPHERD: You must remember, Mr.
17 Chairman, that we had just heard for the first time
18 then that Hydro had adopted the distinction between
19 major supply NUGs, which tend to be the short-term
20 NUGs, and preferred NUGs which tend to be the longer
21 term NUGs. So we wouldn't have been up to speed on the
22 issue of lifetime in any case.

23 THE CHAIRMAN: Do you understand that,
24 Mr. Snelson?

25 MR. SNELSON: No, these rates that are

1 used for these types of calculations, these buy-back
2 rates, are generally used for the less than 5 megawatt
3 non-utility generators. And rates such as these have
4 been produced for a number of years and have been the
5 principal tool for dealing with the smaller
6 cogeneration projects. I don't see the link to the
7 major supply non-utility generators.

8 MR. SHEPHERD: Okay. Let me come back to
9 the undertaking, Mr. Chairman, if it appears after the
10 next couple of questions that it is needed.

11 THE CHAIRMAN: All right.

12 MR. SHEPHERD: Q. Mr. Shalaby, from your
13 knowledge of how the avoided costs works, it is true,
14 isn't it, that if you derive a rate from the avoided
15 costs using one hypothetical NUG and then select a
16 different hypothetical NUG and do the calculation
17 again, you could quite easily get a substantially
18 different rate correct?

19 MR. SHALABY: A. Yes.

20 Q. And isn't that true that in a
21 circumstance like we have now where the short-term has
22 gone down and the long-term has gone up, one of the key
23 variables will be the service life that you assume for
24 your hypothetical NUG, correct?

25 A. Yes.

1 Q. And if you assume a service life of
2 20 years, you will get lower published rates than if
3 you assume a service life of 50 years; correct?

4 A. Yes.

5 Q. It's true that most of your under 5
6 megawatt projects are primarily small hydro which have
7 long service lives?

8 A. Small hydro has long service lives in
9 general, yes.

10 Q. And generally your under 5 megawatts
11 are most likely to be small hydro; is that true?

12 A. It used to be that way. I don't know
13 whether in the last several years the picture has
14 changed, or not. I don't know.

15 Q. With respect to a small hydro
16 facility, your published rates, if modelled on a
17 20-year project, would understate the avoided costs for
18 that project, wouldn't they?

19 A. Well, I want to understand the
20 philosophy of designing the rates or what assumptions
21 are done on the rates before I make any conclusions on
22 what is overestimated or underestimated. If we are
23 talking about calculating avoided costs for a 50-year
24 option, then calculating only the first 20 years would
25 underestimate the avoided cost. But that does not

1 necessarily say that the rate philosophy is either
2 appropriate or inappropriate. I don't want to make
3 that conclusion.

4 Q. Well, remember what we were trying to
5 talk about here is the strategy element, which is that
6 you will pay full avoided costs for hydroelectric and
7 other renewable sources.

8 A. Yes.

9 Q. And if I'm reading you right, if you
10 have a long lifetime project like small hydro and the
11 standard rates are not calculated assuming that long
12 lifetime, then you will be underpaying relative to
13 avoided cost, isn't that correct?

14 A. There are other considerations to
15 enter into ratemaking away from calculating what the
16 avoided cost is.

17 Q. Well, it's your strategy item. It
18 says that it will be set at full avoided cost.

19 A. Yes.

20 MR. SNELSON: A. I think it also comes
21 down to the question of how the full avoided cost is
22 distributed over time. So that also affects whether
23 the avoided cost is low in early years and high in
24 later years and how it rises through time. And that
25 comes into the rate-setting philosophy that Mr. Shalaby

1 is referring to.

2 But going to back to a previous point,
3 the rates for 1991 I believe were given in
4 interrogatory 5.14.16. Sorry 5.14.6. And my notes
5 indicate that that was a December, 1990, document.

6 Q. So it would be based, then, I guess,
7 on the August, 1990, SICs.

8 A. Again, I believe that there was some
9 judgmental aspects in the setting of those rates
10 because some of the information that was subsequently
11 reintroduced into the later update was already known at
12 that time.

13 Q. Okay.

14 THE CHAIRMAN: 5.14.16, is it?

15 MR. SNELSON: Yes.

16 THE CHAIRMAN: That should be given a
17 number. 21?

18 THE REGISTRAR: 21, yes.

19 THE CHAIRMAN: There is a race going on
20 between undertakings and interrogatories. [Laughter]
21 The interrogatories have now gone ahead.

22 MR. HOWARD: Mr. Chairman, I'm pleased to
23 tell you that interrogatory 5.14.16 is already Exhibit
24 321.2.

25 THE CHAIRMAN: It's back at a tie.

1 [Laughter].

2 THE REGISTRAR: It is also 321.2.

3 MR. SHEPHERD: Q. If you take a look at
4 page 75 of Exhibit 682, we see that the 80 per cent
5 NUG, using the project appraisal numbers, has a 4 cent
6 per kilowatthour avoided cost. Niagara has 6.3 cent
7 per kilowatthour avoided cost. Now, I understand that
8 part of the reason for that is that Niagara has an
9 in-service of 2002, so you lose a lot of that
10 short-term low avoided cost; correct?

11 MR. SHALABY: A. That is part of the
12 reason.

13 Q. And if we compared them, the --

14 A. The most significant reason is
15 probably that Niagara has a lower capacity factor. And
16 if you look, for example, at low capacity factor NUGs
17 at 10 per cent, the number is 10.7.

18 Q. What is the capacity factor that you
19 have assumed for Niagara, there?

20 A. We can find out. But typically, I
21 would guess it's somewhere in the thirty to forty
22 percentile. We can look at the hydraulic plan and find
23 out for sure.

24 Q. I'll check it and follow up tomorrow.

25 MR. SNELSON: A. It's not only a

1 question of capacity factor, though. It's also a
2 question of shifting energy production that could also
3 be produced today with the existing facilities and
4 shifting some of the energy production that might have
5 been during off-peak hours into peak hours. So it is
6 not a clean consideration just of capacity factor. You
7 have to look at the change in the energy production
8 between the existing facilities and what it would be
9 with the new facilities.

10 Q. The thing you haven't mentioned is
11 that Niagara also has a 90 year life assumption and the
12 NUG has at 20 year life assumption, right? And that
13 makes a difference.

14 A. I didn't because you did. I was
15 adding the other two factors.

16 Q. Fine. Perhaps you could turn to page
17 53 of Exhibit 74.

18 [12:48 p.m.]

19 In about the middle there's a paragraph
20 that starts, For non-utility generation, it says:

21 For non-utility generation to have
22 full value to reduce the need for new
23 generating plant, there must be a high
24 probability that the non-utility
25 generation will be available and economic

1 for several decades into the future.

2 This is very hard to analyze and place a
3 specific value on because of the
4 uncertainties that far into the future.

5 And it sounds like you are setting that
6 up as a potential disadvantage of NUGs. Am I reading
7 that right?

8 A. No.

9 Q. It's not a potential disadvantage?

10 A. That they have a long benefit into
11 the future, is that --

12 Q. No, the question of whether there's a
13 sufficiently high probability that they will be
14 available and economic in the future?

15 A. That's a statement that, I don't see
16 it as being in the light of advantage or disadvantage.
17 It says, for something to have a long-term value it
18 better be there in the long term. That's all it says.

19 Q. All right. Reliability in terms of
20 whether an option will be available and will be
21 economic at the time you need it, that's an issue for
22 every option; isn't it?

23 A. That is correct.

24 Q. And is it fair to say that in terms
25 of just availability at any given defined future point

1 in time that NUGs are, in fact, more reliable than
2 nuclear, for example?

3 A. I haven't seen specifically the
4 figures, but I would accept a higher availability for
5 non-utility generation.

6 I think the whole import of this
7 paragraph is more to do with the view of the
8 availability of natural gas, and that is the fuel than
9 the reliability of the plant.

10 Q. Yes. The only real question then in
11 terms of the reliability that the capacity will come on
12 when you need it has to do with the economics; right?

13 You are less certain of NUG economics
14 than you are of central generation economics?

15 A. I didn't read this paragraph as being
16 a discussion of the reliability of the plant coming on
17 when you plan it to come on.

18 Q. No, but that is what I'm asking
19 about.

20 A. Can you repeat your question then,
21 because I thought we were discussing this paragraph.

22 Q. Well, we were and I was spinning off
23 it to what I thought was the logical conclusion from
24 it.

25 My question is: You have already said

1 that whether particular capacity will come on stream at
2 a particular point in time in the future, a NUG is more
3 likely, more reliable to do that than a nuclear
4 station.

5 The second question then is: Economics,
6 is there less reliability, less certainty that the NUG
7 will be economic than the nuclear station will be
8 economic?

9 It's a question of where and how much;
10 right -- when and how much, rather.

11 A. Well, this paragraph is talking about
12 the reliability of fuel supply, the dependability of
13 the fuel supply and the question as to the degree to
14 which non-utility generation will be available beyond
15 the period of the firm contract for fuel supply that is
16 available when it is first put into place.

17 Q. That's fine.

18 A. And I still don't see the
19 relationship between that paragraph and your question.
20 They seem totally unrelated to me.

21 Q. Well, leave that and just answer the
22 question, how's that. Don't worry about whether
23 there's a relationship.

24 A. The question was, whether there is --
25 I'm sorry there's a two-part question here. There's

1 economics and reliability mixed up in this question.

2 Q. Let me try this again.

3 A. Okay.

4 Q. Maybe a hypothetical would work. You
5 identify that you need 1,000 megawatts in 2004.

6 A. Yes.

7 Q. The year selected intentionally
8 because you don't, and you have a choice: You can fill
9 it with NUGs or you can fill it with nuclear, say.

10 It's true, isn't it, that you have more
11 certainly today that you will have 1,000 megawatts of
12 NUGs in 2004 than that you will have 1,000 megawatts of
13 nuclear in 2004?

14 A. Presuming that we, in both cases,
15 were to plan on them for that date?

16 Q. Plan on them right now.

17 A. Plan on them right now. I think that
18 we would certainly have a reasonably high confidence
19 that we could get the 2,000 -- the 1,000 megawatts of
20 non-utility generation provided we were prepared to pay
21 whatever was the going rate for non-utility generation
22 about four years ahead of 2004 when that decision would
23 have to be made.

24 Q. Okay. And as compared to nuclear,
25 there's a higher confidence that you will have that

1 there than you will have the nuclear there then;
2 correct? Forget the economics for a second.

3 A. There are possibilities of delays
4 with respect to nuclear. They tend to be different
5 things. We are talking about uncertainty about lead
6 time in the one case in terms of whether approvals are
7 obtained on time, whether construction is completed on
8 schedule, with the nuclear option; versus the
9 uncertainties associated with relying upon contracting
10 for something in the year 2000 for year 2004 with
11 whatever terms and conditions are appropriate in the
12 year 2000 in terms of price and so on.

13 And that's a pretty difficult judgment to
14 make at this point in time.

15 Q. Okay. It is true that you have
16 almost -- you have almost a certainty, if you are
17 willing to pay what it costs, you have almost a
18 certainty of getting the capacity from NUGs; correct?

19 A. No. Let's say for sake of example,
20 and you have put your hypothetical, that that situation
21 could very well coincide with a period when many
22 utilities are seeking a lot of capacity and we might be
23 in the situation where the order books for combustion
24 turbine manufacturers have a six-year backlog and,
25 consequently, if we were to be contracting for a NUG in

1 the year 2000, while physically we could build it by
2 2004 and, everybody willing, with normal supply that
3 would be achievable, but with a long lead time
4 situation on the major power supply components, then
5 maybe it couldn't be obtained until 2006.

6 MR. SHEPHERD: Mr. Chairman, it might be
7 appropriate to break now rather than go on to the
8 next --

9 THE CHAIRMAN: All right. We will break
10 now until 2:30.

11 THE REGISTRAR: Please come to order.

12 This hearing will adjourn until 2:30.

13 ---Luncheon recess at 12:58 p.m.

14 ---On resuming at 2:33 p.m.

15 THE CHAIRMAN: Mr. Shepherd.

16 MR. SHEPHERD: Thank you, Mr. Chairman.

17 Q. We have dealt with Darlington at some
18 length in Panel 9 just recently, so I won't do anything
19 that was current then.

20 I will ask you this though, Mr. Snelson:
21 Isn't it true that in the last few weeks in fact the
22 first suggestions have been made by senior staff at
23 Darlington that perhaps you should consider the
24 possibility that you just won't be able to get it
25 working?

1 THE CHAIRMAN: Ever, is that what you
2 mean?

3 MR. SHEPHERD: Q. Ever?

4 MR. SNELSON: A. I haven't heard those
5 suggestions.

6 Q. Okay. You are saying you don't know
7 or they haven't -- you are saying you don't know;
8 right?

9 THE CHAIRMAN: I'm sure if something like
10 that happened we would be told about it. Isn't that
11 right, Mr. Snelson?

12 MR. SNELSON: I believe that would be the
13 case.

14 MR. SHEPHERD: Q. Okay. We heard in
15 Panel 2 that your contingency plan for in-service
16 delays for Darlington was two months. Do you recall
17 that, from November 1st to the end of December of '91?

18 MR. SNELSON: A. Was this Mr. Barrie's
19 evidence you are referring to?

20 Q. I believe so, yes.

21 A. I haven't refreshed my memory as to
22 his evidence at that time.

23 Q. Well, will you accept that subject to
24 check?

25 THE CHAIRMAN: It's been updated

1 considerably since then. We had the latest news on
2 what Darlington's in-service expectations were in Panel
3 9, which has been completed.

4 MR. SHEPHERD: Exactly.

5 THE CHAIRMAN: What Mr. Barrie said in
6 Panel 2 doesn't really matter.

7 MR. SHEPHERD: Q. Okay. Let's go on to
8 major supply options, and I'm going back to the DSPS.
9 And if you could take a look at page 21, please,
10 strategy item 5.1.1 says:

11 Major increases in supply will be
12 provided by low-cost options available to
13 meet the need after allowing for the
14 effects of demand management and
15 non-utility generation.

16 And I take your evidence to be that you
17 don't introduce major supply options until you have
18 exhausted cost-effective demand management and
19 non-utility generation?

20 MR. SNELSON: A. Certainly our plan is
21 to develop cost-effective demand management and
22 preferred non-utility generation options, not
23 necessarily major supply non-utility generation options
24 before introducing major supply.

25 Q. Okay. Now, major supply options

1 include the Manitoba Purchase as you testified; right?

2 A. That's correct.

3 Q. And, in fact, if you will look at
4 page 23, right at the end of your strategic elements,
5 you say:

6 Long-term firm purchases of
7 hydraulic power from neighbouring
8 provinces will be considered as an
9 acceptable alternative to building new
10 supply facilities after maximum efforts
11 are made to utilize the cost-effective
12 indigenous resources of Ontario.

13 So presumably then, demand management and
14 NUGs that are using Ontario resources - demand
15 management is by nature I suppose - should be, in your
16 planning, ahead of purchases from neighbouring
17 utilities; correct?

18 A. Well, certainly we consider demand
19 management to be equivalent to Ontario resources.

20 Q. That wasn't my question. My question
21 was: Major supply after Ontario resources -- sorry,
22 purchases from other utilities after Ontario resources;
23 correct?

24 A. After indigenous resources of
25 Ontario, yes.

1 Q. Okay.

2 A. And I have indicated that demand
3 management would be an indigenous resource of Ontario.

4 Q. And so would most of your NUG
5 options; correct?

6 A. Certainly hydroelectric NUGS, NUGs
7 from waste fuel, NUGs from landfill gas, solar, wind
8 NUGs would be considered to be indigenous resources of
9 Ontario.

10 Q. Okay. If you could turn to page 68
11 of the DSPS, please. This is a discussion of the pros
12 and cons of purchases and, as I understand this, what
13 it says is: The good things about purchases from
14 Manitoba and Quebec are they are renewable resources
15 indigenous to Canada but not Ontario, they provide
16 diversity and they have a low environmental impact in
17 Ontario.

18 But on the other side it means exporting
19 jobs, so lack of flexibility, and long lead times, a
20 lack of control over the projects and high cost.

21 Now, those are all factors in considering
22 the Manitoba Purchase; correct?

23 A. I don't see the reference in here to
24 high cost.

25 Q. No, I'm sorry, it's in the next

1 paragraph.

2 Capital cost to construct new
3 hydroelectric generation and transmission
4 in Quebec or Manitoba will likely be
5 as high or higher than the capital
6 cost of major coal or nuclear facilities
7 in Ontario.

8 A. That doesn't say the purchase is
9 going to be high cost, it only says it is high capital
10 cost.

11 Q. Oh, okay. Then on the next page it
12 says:

13 At this stage of negotiations it is
14 not clear that purchases will be economic
15 compared to other options open to
16 Ontario Hydro.

17 A. And that was the situation when the
18 demand/supply planning strategy was written.

19 Q. So all I'm asking is, these are still
20 the considerations that you look at for something like
21 Manitoba Purchase; right?

22 A. Yes, and we have talked about also
23 the benefits of the transmission within Ontario. This
24 isn't just a question of putting a little bit of wire
25 across the border to connect to a purchase, this is a

1 major improvement to the transmission system in
2 Ontario.

3 Q. Yes. But haven't you already agreed
4 that the transmission benefits are already included in
5 the dollar numbers?

6 A. To a large degree, yes.

7 Q. So you can't include it twice; right?

8 A. There are still intangible benefits
9 of the transmission that may not be captured in the
10 dollar numbers.

11 Q. When you calculated the cost of the
12 transmission from Manitoba - I didn't think I was going
13 to have to go into this - when you calculated the cost
14 of the transmission from Manitoba, you said here is how
15 we would make the system better without Manitoba, here
16 is how we would get all the benefits we want; and
17 here's how we get it with Manitoba and the relative
18 costs.

19 And you said only the difference is
20 charged to Manitoba. So doesn't that mean that you are
21 comparing the benefits one way to the benefits the
22 other way?

23 A. Yes.

24 Q. Same benefits; right?

25 A. They are in large measure the same

1 benefits, but not entirely so:

2 Q. All right. I understand from your
3 direct evidence that you currently don't expect to buy
4 supplemental energy under the Manitoba contract for at
5 least the first nine years; is that correct?

6 A. That is how it was modelled in the
7 managed surplus cases. I have indicated previously, I
8 believe in the cross-examination of the MEA, that a
9 better assumption would be to have assumed that it was
10 only taken during periods when coal-fired energy or
11 more expensive energy was incremental on the system.

12 That was a broad assumption in the
13 managed surplus cases.

14 [2:45 p.m.]

15 Q. Okay. This is your evidence in
16 transcript Volume 149, it's your direct evidence, page
17 26333. It says, line 23:

18 In the update nuclear fossil case it
19 was assumed that over the years 2000 to
20 2010 the supplemental energy that is
21 available through the Manitoba Purchase
22 contract would not be taken as part of
23 the illustrative approach for managing
24 the surplus.

25 And then you say in the enhanced case that it is taken.

1 THE CHAIRMAN: That's what he said just
2 awhile ago.

3 MR. SHEPHERD: Q. So I take it, then,
4 that you were saying that this Board, for the purposes
5 of determining what your plan means in real terms, what
6 you are actually going to do, should not assume, in
7 fact, that the update nuclear, update fossil case is
8 correct in this respect. We should assume that it is
9 incorrect.

10 MR. SNELSON: A. I have said it was a
11 broad assumption that was made as part of the
12 illustrative surplus management cases. A more refined
13 assumption would be that part of the supplemental
14 energy would be taken. And that's the more likely
15 assumption.

16 Q. What is your estimate of the capacity
17 factor that you expect from the Manitoba Purchase? You
18 have to take 65 per cent and you can't take more than
19 80 per cent?

20 A. That is correct.

21 Q. What is the number?

22 A. I don't have an estimate. It would
23 be different for each year. If you were to go to the
24 more refined assumption then you would find that the
25 greater the surplus that existed at a particular point

1 in time, then perhaps the lesser the supplemental
2 energy that one would take.

3 But through the whole period you would
4 take some of the supplemental energy.

5 Q. Now, in your direct evidence you have
6 told us that the avoided cost of the Manitoba deal,
7 calculated as if it were a NUG, is 5.39 cents a
8 kilowatthour but the LUEC is only 4.70 cents, producing
9 a positive cost/benefit ratio. Now that LUEC is
10 calculated at an 80 per cent capacity factor; correct?

11 A. Yes.

12 Q. But, in fact, your evidence is that
13 you are not going to have an 80 per cent capacity
14 factor; isn't that right?

15 A. It is quite possible that we will
16 have less than the 80 per cent capacity factor for some
17 of the early years.

18 Q. Have you done the calculation of the
19 LUEC on the basis of the way that it's really going to
20 happen or your current plan for what you are going to
21 do?

22 A. No, but I think that you can put
23 bounds on it by looking at the calculations that we
24 have at 65 per cent AEFC which assumes that no
25 supplemental energy is taken and at 80 per cent that

1 assumes that supplemental is all taken.

2 Q. Okay.

3 THE CHAIRMAN: All right, Mr. Snelson,
4 what are you looking at?

5 MR. SNELSON: I am in Exhibit 442.7.

6 THE CHAIRMAN: What page?

7 MR. SNELSON: At page, it is one of the
8 appendices -- appendix C, page 3.

9 MR. SHEPHERD: Q. So your LUEC, then, is
10 not going to be 4.7 cents, right? You know that?

11 MR. SNELSON: A. If we don't take all of
12 the supplemental energy, the LUEC will not be 4.7
13 cents.

14 Q. And it might be as high as 5.3 cents,
15 but it won't be quite that high because you will take
16 some supplemental energy.

17 A. That is correct.

18 Q. This calculation also includes the 10
19 per cent preference premium; is that correct?

20 A. Yes, I just indicated that in my
21 direct evidence and I adjusted for that.

22 Q. And if you adjust for the preference
23 premium and you adjust for the real capacity factor, in
24 fact, you no longer have a cost/benefit ratio, do you?

25 THE CHAIRMAN: I'm sorry. What did you

1 adjust for?

2 Q. You adjust for the preference premium
3 and you adjust for the real capacity factor, it's
4 something closer to 65 rather than 80.

5 THE CHAIRMAN: I don't think that's been
6 established. All Mr. Snelson said is it might be
7 possibly less than 80 per cent in the early years.
8 That is as far as he went.

9 MR. SHEPHERD: Q. Well, Mr. Snelson,
10 your current plan is that you will be substantially
11 below 80 per cent in the first 10 years; isn't that
12 correct?

13 MR. SNELSON: A. I don't believe we
14 would be substantially below 80 per cent for all of
15 the first 10 years. We would be for perhaps some of
16 the early years but not for that full period.

17 Q. Okay. And is it correct that if you
18 took the actual LUEC according to the capacity factors
19 you currently expect and remove the preference premium,
20 which on your own rules doesn't apply here anyway, that
21 the cost/benefit ratio would no longer be favourable?

22 A. I doubt that.

23 Q. You doubt that. You think it would
24 still be favourable?

25 A. Well, I have just done the

1 calculation from these numbers based on 65 per cent
2 AECF.

3 Q. Yes.

4 A. For both the avoided cost and for the
5 LUEC, which are both in this appendix.

6 Q. Yes?

7 A. And that's on the assumption of
8 taking no supplemental energy.

9 Q. Yes?

10 A. On that basis the value is 5.91.
11 That is the LUEC of the avoided cost on page 4 of this
12 appendix.

13 Q. All right.

14 A. And the LUEC, of actually buying it,
15 so the cost of it, is 5.30. And if my trusty solar
16 calculator gives an answer of a cost/benefit ratio of
17 .89. And adjusting by 10 per cent to take out the
18 preference premium will bring that very close to one.

19 Q. Okay. The avoided cost calculation
20 on page 4 that you are referring to, that assumes
21 optimum scheduling; correct?

22 A. Yes.

23 Q. And I think we heard evidence in
24 Panel 7 that in the real world you do not expect to get
25 optimum scheduling but something less than optimum

1 scheduling; is that correct?

2 A. I don't recall Panel 7's evidence in
3 that regard.

4 Q. Wouldn't that be true.

5 A. We have rights within the contract to
6 considerable degree to schedule that energy. So there
7 may be something less than perfection, perhaps, but we
8 do expect a considerable degree of freedom to schedule
9 that energy to the times when it is valuable.

10 Q. You would agree that perfect
11 optimization of scheduling is not likely?

12 A. Perfection is not usually achieved in
13 anything.

14 Q. You will also agree that these
15 numbers assume perfect optimization; correct?

16 A. They assume that the energy is taken
17 in peak periods in preference to off-peak periods, yes.

18 Q. So these avoided costs numbers then
19 are obviously overstated to some degree, even if it's
20 very small?

21 A. To some degree. It may be very
22 small.

23 Q. Mr. Snelson, is there somewhere in
24 here where the avoided cost is actually calculated in
25 442.7? Do you show the calculation as you have done

1 for sample NUGs, for example?

2 A. I don't believe the spreadsheet of
3 the calculations is in this document.

4 Q. You have done that obviously, you
5 have the numbers; correct?

6 A. That is correct.

7 Q. Can you undertake to provide it.

8 A. I don't think there's any difficulty
9 in doing that.

10 THE CHAIRMAN: Number?

11 THE REGISTRAR: 684.22.

12 ---UNDERTAKING NO. 684.22: Ontario Hydro undertakes to
13 provide the spreadsheet for the avoided
cost calculation as done for sample NUGs.

14 MR. SHEPHERD: Q. Now, Mr. Snelson,
15 thankfully Mr. Heintzman spent a considerable amount of
16 time on Manitoba on Monday and so I can avoid doing
17 that. I do have one question, though.

18 One of the unquantified benefits that you
19 talk about with respect to Manitoba is that it reduces
20 the use of fossil fuels. Now, in your new approach to
21 valuing the Manitoba Purchase, you have already
22 included the full dollar credit for avoiding the use of
23 fossil fuels; is that right?

24 MR. SNELSON: A. No.

25 Q. Well, haven't you used the same

1 method that you used for NUGs?

2 A. Yes.

3 Q. Doesn't that include a full credit
4 for displacing fossil?

5 A. It includes a full credit for
6 displacing acid gas emissions.

7 Q. So the additional benefit is there is
8 other bad things about fossil which you were also
9 displacing but you haven't put a dollar value in?

10 A. There are other aspects of fossil
11 that are probably considered to be undesirable like
12 CO(2) emissions.

13 Q. Yes. Let me go back to the DSPS and
14 to page 21. In strategy item 5.2.1, this strategy
15 items says:

16 Ontario Hydro will seek improvements
17 to the planning approval process to
18 provide increased flexibility.

19 Now, you are not, in fact, seeking any
20 such improvements in this hearing are you?

21 A. That is correct.

22 Q. And on page 57, which is again part
23 of the rationale under this same section, you say that
24 this is in the last complete paragraph, that starts at
25 the planning approval process, and it is talking about

1 environmental assessment hearings, and it says, about
2 the middle of that paragraph:

3 While this process has worked well for
4 many small projects which only effect a
5 limited area, it is not clear that the
6 process is adequate for major generation
7 and transmission projects.

8 And my question is, this comment, this concern, does it
9 relate to planning hearings or does it relate to
10 site-specific hearings; what is it you are dealing with
11 there?

12 Are you dealing with a hearing to get a
13 site approval for a nuclear station or are you dealing
14 with a hearing like this looking at your whole plan?

15 A. It could be referring to either one
16 or both of those.

17 Q. And you go on to say in the next
18 paragraph:

19 The length of the approval process
20 together with the construction time of
21 major projects reduces the flexibility to
22 respond to forecasts of future
23 conditions.

24 And on the next page you comment that where your
25 approvals lengthen your lead times they make your

1 forecast less reliable because they are farther out.

2 And you say, quoting you, at the end of that paragraph,
3 the partial paragraph at the top of page 58:

4 So forecasts are less reliable and
5 planning decisions are more likely to be
6 inappropriate.

7 And those concerns remain true today; don't they?

8 A. I think they are fundamental
9 concerns, yes.

10 Q. Now, in the next paragraph then, you
11 talk about a concept called approvals banking, and you
12 talked about this with Mr. Mark the other day.

13 Approvals banking, am I correct that it
14 is getting approvals, sort of having a bunch of
15 approvals on the shelf that you can select later on, as
16 circumstances warrant?

17 A. That is, I think, generally the
18 concept of approval banking.

19 Q. And that's what you are asking for
20 here, right, in this hearing?

21 A. No, we are asking for approval
22 facilities that we expect to proceed with.

23 Q. Well, okay. Could you turn to
24 transcript Volume 150, page 26506. This is Mr. Mark
25 cross-examining Mr. Dalziel.

1 And at the bottom of page 26506, line 22,

2 Mr. Mark says:

3 And, indeed, wasn't that the whole
4 objective of this exercise, to obtain
5 approvals that you might need without any
6 obligation necessarily to proceed if you
7 don't need them?

8 And Mr. Dalziel answers:

9 That is correct.

10 Now, isn't that approvals banking?

11 A. No, I believe that is a statement of
12 fact, that when one obtains approvals from an
13 Environmental Assessment Board or other bodies, that
14 does not necessarily oblige the proponent to proceed
15 with those facilities. That, I think is a legal
16 question. But I suspect that is the correct response.

17 Q. Well, Mr. Mark asked you whether that
18 was the object of the exercise and Mr. Dalziel said
19 yes, it was.

20 MR. HOWARD: You have to read the
21 question.

22 THE CHAIRMAN: I'm looking for the words
23 object of the exercise. Here it is. Bottom of the
24 page.

25 MR. SHEPHERD: Let's not quarrel about

1 the words.

2 Q. Perhaps you could look at page 56 of
3 the DSPS, Exhibit 74.

4 [3:00 p.m.]

5 And in the partial paragraph at the
6 bottom of the page you say:

7 The choice of options to meet the
8 need for major increases in supply will
9 be made based on the most economical
10 choices that are environmentally and
11 socially acceptable as seen at the time
12 that decision must be made.

13 And then on the next page in the top you
14 say:

15 It is not possible to be specific at
16 this time as to what option will be
17 chosen.

18 And it's true in fact that that statement
19 is still true today; right, it's not possible to be
20 specific at this time as to what option will be chosen?

21 A. Yes. I think you have to read that
22 statement in the context of the whole paragraph, but
23 clearly we have said that when we need major supply we
24 are not making a judgment as to whether we would be
25 choosing fossil operations or nuclear options or some

1 mix of them.

2 Q. Sorry. Are you saying that this only
3 relates to fossil or nuclear?

4 A. No. It isn't actually a paragraph
5 that is dealing with supply options and this whole page
6 is dealing with Ontario Hydro supply options I believe
7 because the non-utility generation options have been
8 dealt with elsewhere and demand management options have
9 been dealt with elsewhere.

10 Q. One of the difficulties that some
11 people might have with open-ended approvals I guess -
12 and maybe it's implicit in a lot of the discussion that
13 has already been had before this Board - is the notion
14 that once the approval is in place changes of
15 circumstances really are left in your judgment whether
16 you proceed to implement the approval or not, whether
17 you do it next week or next year or 10 years from now,
18 those are all things that are left to your judgment
19 once you have an approval; right?

20 A. There may be terms and conditions
21 associated with an approval, but in terms of the
22 implementation of it, then I believe that that is the
23 case, although there are other checks and balances such
24 as for the committing of the construction of a major
25 facility, then we have to get an order-in-council from

1 the provincial government.

2 Q. So the government could say: No,
3 your approval is out of date now, or your approval
4 doesn't apply any more because times have changed?

5 A. The government could, I believe, deny
6 an order-in-council for whatever reason it saw as
7 appropriate.

8 Q. Would it be appropriate, in your
9 view, to place a condition on the approvals that you
10 are asking for requiring regular review and affirmation
11 of those approvals on a periodic basis?

12 A. I wouldn't speculate as to what were
13 appropriate terms and conditions. We have indicated in
14 Exhibit 452 that, as we indicated in Exhibit 74, we are
15 concerned about approval processes and we indicate that
16 we are interested in approval processes that are more
17 regular and can build on previous approvals and can
18 accommodate more frequent decisions to adjust as things
19 change.

20 That's on pages 20 and 21 of Exhibit 452,
21 the paragraph that goes over between those two pages.

22 Q. I understand that. But I'm not
23 asking about how you deal with approvals in the future,
24 new approvals, I'm asking about any approvals that you
25 get out of this process.

1 And I'm not asking you a legal question,
2 I'm not asking you to make submissions, I'm asking you
3 as a planner, it is true that there are a lot of
4 uncertainties about what the future will hold; true?

5 A. Yes.

6 Q. And as a result of those
7 uncertainties there is every reason to believe there
8 could be circumstances in which your approval is no
9 longer appropriate; true?

10 A. That is possible, that there could be
11 such circumstances.

12 Q. Therefore, I'm asking you, from a
13 planning point of view, your role as a planner, can you
14 tell us what sort of ongoing review mechanism, or
15 whether there should be an ongoing review mechanism
16 that ensures that the approval is no longer valid if
17 the situation goes off the rails?

18 A. As a planner and speaking here as a
19 planner, I'm not speaking as regards any legal
20 requirements--

21 Q. Of course.

22 A. --as a planner then, the fewer the
23 constraints on planning, then the better we are able to
24 respond from a planning point of view.

25 But that has to be balanced. From a

1 planning point of view we also have to recognize that
2 our decisions have to be seen to be and have to be
3 publicly acceptable. And so I think it would be
4 impractical as a planner just to take the view that
5 having obtained an approval no matter what changes then
6 willy-nilly we had the right to implement that, come
7 what may.

8 So I think there are practical
9 constraints in that, but as a planner we would prefer
10 to have as few constraints as possible.

11 Q. But surely in the other direction you
12 would prefer not to be totally unconstrained, surely
13 there's a point at which you want to be able to say
14 listen, I don't want responsibility for this decision,
15 it's not a decision I should appropriately make. Isn't
16 that right?

17 A. We clearly have to make decisions and
18 I did indicate that we wanted decisions to be ones that
19 would be acceptable publicly because I don't think they
20 will be effective unless they are accepted. They have
21 to be accepted to be effective.

22 Q. Yes. I'm asking a normative question
23 though. It's true; isn't it, that some of the
24 decisions relating to planning are decisions that are
25 not appropriately made by planners, they are

1 appropriately made by regulatory boards or by
2 politicians or by other means other than planners?

3 A. As I've indicated, we like to have
4 and we need to have public acceptance of our plans.

5 Q. You have talked a number of times -
6 you being Hydro witnesses - I'm sorry, as a collective
7 body have a talked a number of times in these hearings
8 about the fact that certain judgments, that you don't
9 feel that you should make them at all.

10 For example, judgments about what the
11 proper level of certain environmental controls should
12 be, or judgments about levels of safety requirement.
13 And there's been quite a list of things that you feel
14 the government should decide that rather than Hydro.

15 And am I right, have I got the right
16 impression there?

17 A. I'm not sure that it's exactly as you
18 have described. We work within a framework that is
19 provided by external requirements. That doesn't remove
20 from us the requirements to make judgments in those
21 areas.

22 Q. I just have one other question about
23 the approvals process, for now; and, that is, if you
24 take a look at page 58 of the DSPS and if you take a
25 look at the first complete paragraph about halfway

1 through it, it says:

2 However, it is clear that there is a
3 risk that the length of the process
4 and the potential for delay will cause
5 unnecessarily expensive and less
6 environmentally desirable options to
7 proceed because approval and construction
8 of the more desirable options could not
9 be completed in time.

10 Now, let's not worry at this point about
11 the cost side of it, I'm asking only about the
12 environmental desirability of options, and I wonder if
13 you can give me an example of a short lead time option
14 that is on your list of things to do that is less
15 environmentally desirable than the long lead time
16 options that you are currently considering?

17 A. That isn't necessarily what is being
18 referred to in that statement.

19 Q. Isn't it saying delays in the
20 approval process could result in you not being able to
21 build the long lead time stuff and, as a result, you
22 have to build the short lead time stuff which might be
23 less environmentally desirable. Am I reading that
24 wrong?

25 A. Sorry, yes. You are reading it

1 correctly. The sort of situation I think that is
2 envisaged there is, for instance, let us say for
3 example that the longer lead time option that was being
4 planned was an integrated gasification combined-cycle
5 plant, which is about as clean as you can make a
6 coal-fired option, and that the approval process for
7 that was delayed, then you might very well go with
8 combustion turbines to meet your capacity problem and
9 generate the additional energy, or most of the
10 additional energy by increased use of the existing
11 system. And that would probably be higher emissions
12 than if the IGCC option had been able to go ahead.

13 Q. But it is true; isn't it, that
14 generally speaking you have, in your range of short
15 lead time options, most of your more environmentally
16 attractive options as well; correct, DSM, NUGs, CTUs,
17 combined cycle?

18 A. DSM is an option that you have to
19 work at steadily over a long period of time to get the
20 desired results. So I'm not sure that I would include
21 that in the short lead time options that are available
22 for flexibility purposes.

23 Q. Shorter lead time than nuclear?

24 A. You have to work at it steadily over
25 a decade or so to get the full results, and you can't

1 suddenly turn around and say: I would like to have an
2 extra 1,000 megawatts over here in three or four years
3 time that I haven't planned on.

4 But coming back to your question, some of
5 the environmentally more accepted options do have short
6 lead times, and the combined-cycle plant some of the
7 gas-fired non-utility generation options fall into that
8 category and they are relied upon and are responsible
9 for it, and that's one of the reasons they are there.

10 Q. There's a lot discussion in this
11 hearing about whether it's important for you to have
12 certain approvals, for example, for nuclear and fossil,
13 just to have them available because you might need
14 them.

15 And it's correct; isn't it, that aside
16 from the cost issue - which I'll get to in a minute -
17 from an environmental perspective, you pay virtually no
18 penalty if you don't get the approvals today and you
19 have to go to the shorter lead time options. Isn't
20 that correct, no environmental penalty?

21 A. It depends on which particular
22 environmental factors you are looking at.

23 Q. Overall.

24 A. I think Ms. Howes has indicated that
25 it's very hard to make a judgment overall on

1 environmental factors, that one is looking at managing
2 the situation with respect to a wide variety of
3 environmental factors, all of which have to be managed.
4 [3:15 p.m.]

5 Q. Okay. Back on page 21 of DSPS you
6 have a heading there Unit Size, Plant Size, and
7 Flexibility. And your strategic item in 5.3 is, your
8 strategic principle is, single or two unit commitment
9 of economically sized units in multi-unit stations will
10 be considered to maintain flexibility.

11 And then on page 59 that is further
12 explained in the first complete paragraph, where it
13 says in the last sentence:

14 - It is possible to achieve most of the
15 economies of multi-unit stations by
16 staged commitment of one or two units at
17 a time while preserving flexibility to
18 slow down or cancel later units.

19 And that's what you are doing in your
20 planning units, isn't it, your long-term planning?

21 A. We are relying upon that, yes. But I
22 am not sure that we have particularly shown that in the
23 Update Plan.

24 Q. Well, isn't that what you were saying
25 you were going to do with the CANDU 6s at the end.

1 A. One of the advantages we see in the
2 CANDU 6s over the 4 by 881 plants, as I said in my
3 direct evidence, actually goes beyond the strategy
4 element but is consistent with the spirit of it, and
5 that is that the CANDU 6s are closer to independent
6 single-unit stations than the 4 by 881. And so you do
7 have more freedom to commit them one at a time and to
8 build them in a staged manner.

9 Q. Now, you are not asking for any
10 approvals for those, of course.

11 A. That's correct.

12 Q. But they are included in your
13 calculation of avoided costs, aren't they?

14 A. Yes, they are.

15 Q. And when you include a multi-unit
16 staged commitment facility in your plans, how do you
17 cost it today? Do you assume that all units will be
18 built, or only the first is built, or some combination?

19 A. I believe it is that all four are
20 built in sequence.

21 Q. But it's more expensive on a per
22 megawatt basis to build only one unit of a multi-unit
23 station rather than all of them, right?

24 A. That is correct.

25 Q. And if you are adopting a staged

1 commitment strategy, there's some possibility you will
2 have to stop after the first unit; right?

3 A. There's some possibility that you
4 might have a larger gap between the first and second
5 unit than you planned on.

6 Q. Now, there is, is there not, a
7 probability technique commonly used in planning to
8 predict the expected cost of a facility where more than
9 one possible future is contemplated; right?

10 A. There are techniques to calculate a
11 variety of paths into the future and weight them by
12 probabilities to achieve a result.

13 Q. Is it correct that simply put you
14 multiply the cost in each possible future by the
15 probability of that future occurring and add the
16 results together to get your expected value?

17 A. That is the method of calculating the
18 expected value, which I believe was discussed in
19 chapter 6 of Exhibit 3.

20 Q. Yes. Now, I am going to ask you to
21 bear with me while we go through a simple example.
22 Let's assume a four-unit station in which each unit
23 costs \$700 and the common facilities cost \$400. Now,
24 am I correct that if we build all four, the total cost
25 is \$3,200 so the cost per unit is \$800?

1 A. Sorry. It's four units, each one
2 costs \$700.

3 Q. \$700 direct costs.

4 A. And \$400 common facilities.

5 Q. Common facilities.

6 A. And how big are the units?

7 Q. It doesn't matter. They are equal
8 sizes.

9 A. Okay. So the total cost is \$3,200.

10 Q. Yes. So each unit costs \$800, right,
11 if you build all four?

12 A. Yes.

13 Q. And that's how you cost it for
14 avoided costs purpose.

15 A. Yes, there is a some adjustment to
16 this with regard to timing and present values.

17 Q. But it's basically it.

18 A. Essentially, I think for the point
19 you are interested in, yes.

20 Q. And if you stop after the first unit,
21 that unit costs \$1,100, right, being \$700 plus the
22 costs of the common facilities.

23 A. If you never proceed with any of the
24 other units, yes.

25 Q. Okay. If you did a probability

1 analysis that said there was an 80 per cent chance of
2 building all four and a 20 per cent chance of stopping
3 after one, and I understand I'm simplifying this
4 enormously but we just simply can't do the real math of
5 all the various probabilities. If you did just those
6 two probabilities, 80 per cent all four, 20 per cent
7 one only, am I correct that the way you would calculate
8 that is you multiply \$800, the cost of one unit out of
9 four, by 80 per cent and you get \$640. You then
10 multiply \$1,100, which is the cost of one unit by
11 itself, times 20 per cent to get \$220. And you add the
12 two together get \$860, which probabilistically is the
13 expected cost of the first unit of that facility;
14 correct?

15 A. That is one way of looking at it.

16 Q. Okay. But we are now talking about
17 probabilistic costs analysis. I realize there are
18 other ways of doing cost analysis. But using
19 probabilistic cost analysis, that is the right answer,
20 isn't it?

21 A. This is assuming you are comparing
22 two options. One which builds one unit, one which
23 builds four. So they are doing different jobs. So you
24 would have to put this into a complete scenario as to
25 how the power system was to develop and what the other

1 circumstances were. But as I have said, this is one
2 way of looking at it.

3 Q. Okay. I'm not comparing two options
4 here, Mr. Snelson. I thought that was clear. I am
5 comparing two futures for one option, isn't that right?
6 Isn't that what probabilistic analysis does?

7 A. Probabilistic analysis can be used to
8 analyze a whole host of different situations with
9 probabilities associated with them.

10 Q. All right. The example I gave you --
11 you are not misunderstanding me, are you, that we are
12 talking about a decision today to build a staged
13 commitment four unit facility and building in the
14 flexibility to stop after one or after two or after
15 three. So what we are talking about is one planning
16 decision which has two, in this case, two possible
17 future outcomes, right?

18 A. Yes.

19 Q. And the proper way, isn't it correct,
20 the proper way to cost that, assuming you know the
21 probabilities, is as I described; correct?

22 A. You would be costing out, if you were
23 doing avoided cost calculations, you would be doing it
24 for a variety of scenarios for the future, and this
25 would be one part of it. But I have accepted that this

1 is one way of looking at it.

2 Q. And that is not, in fact, how you do
3 it in your avoided cost calculations, is it?

4 A. I believe the avoided cost
5 calculations are based on -- the latest version, I
6 believe, are based on the update nuclear managed
7 surplus case. And one can look at the capacity
8 additions associated with that and see the schedule
9 they are on. And I believe that they are on a schedule
10 that is a continuous program of building for that one
11 site.

12 Q. And it is true, isn't it, that
13 mathematically that must mean that your avoided costs
14 are understated with respect to staged commitments
15 facilities, isn't that correct?

16 A. This is a factor that would tend to
17 increase avoided costs if it was taken into account.

18 Q. Back on page 21 here of the DSPS, you
19 talk about site acquisition. And you say,

20 New sites for major generating plants
21 shall be sought to allow generating
22 stations of economic size to be built
23 while maintaining a geographical balance
24 of electricity demand and supply.

25 Now, am I correct that it is not your

1 current belief that you have a geographical balance
2 today, that you believe that there is somewhat of a
3 geographical imbalance between demand and supply today?

4 A. The statement here talks about
5 maintaining a rough balance in load and generation in
6 broad areas of the province. And this is something
7 that is a matter of degree. At present, we do have
8 about half our load that is visible from the top of the
9 CN tower and we do not have half our generation that is
10 visible from the top of the CN tower and we are out of
11 balance to that degree.

12 Q. Well, in terms of sites for new
13 facilities, it's true that the sites you currently own
14 do not represent a good geographical distribution for
15 new facilities, do they? As the ones that you could
16 put more capacity on, they do not have a good
17 geographical distribution, do they?

18 A. Which sites have you got in mind?

19 Q. Well, I'm talking, I mean, I'm
20 talking about all of the sites you currently hold.

21 A. Darlington "B" site, Wesleyville. We
22 have sites possibly for combustion turbine units at
23 some of our existing plants. Possibly there's been
24 talk about Hearn and Keith generating station sites,
25 Lennox.

1 Q. Let me help you out. This isn't
2 fair. Turn to page 59 of DSPS and you will see the
3 paragraph in the middle of the page. About halfway
4 through it Hydro says, and this was in 1989--

5 A. Yes.

6 Q. At present, sites owned by Hydro that
7 are suitable for economically-sized
8 fossil or nuclear plants are not well
9 distributed across the province. It is
10 important to acquire new sites so that
11 when major new generation is required,
12 this balance can be maintained.

13 A. I think the statement here is
14 referring to, I talked about Wesleyville, Darlington
15 and Lennox. They are the three largest sites that are
16 available to us, and they are all east of Toronto. And
17 to that extent, the balance is not very good.

18 Q. Okay. And if you take a look earlier
19 in that paragraph, you say, the key reason for getting
20 this balance is, the fourth line in that paragraph, to
21 minimize total system costs; correct?

22 A. Yes.

23 Q. On the other hand, now that's from a
24 system point of view. But on the other hand it's true,
25 isn't it, that if you model a particular new station,

1 you propose to build a nuclear station, for example,
2 and you model it as if built on a cheaper site or on a
3 new site, the new site model is going to be more
4 expensive, right?

5 A. That's the way in which our
6 calculations are done, and they show that result.

7 Q. In the materials that you filed since
8 the DSP Update, the managed surplus plans, for example,
9 you are assuming in each case that the new major supply
10 from fossil or nuclear is built on existing sites,
11 correct?

12 A. No.

13 Q. Okay. In your costing, did you
14 assume a new site, then?

15 A. I believe that we assumed that the
16 first major supply addition would be an existing site
17 and the second one would be new site.

18 Q. Okay. I think that might be an
19 appropriate time to take a break, Mr. Chairman.

20 THE CHAIRMAN: All right. Fifteen
21 minutes.

22 THE REGISTRAR: Please come to order.
23 The hearing will recess for 15 minutes.

24 ---Recess at 3:30 p.m.

25 ---On resuming at 3:52 p.m.

1 THE REGISTRAR: Please come to order.

2 This hearing is again in session. Be seated, please.

3 THE CHAIRMAN: Mr. Shepherd.

4 MR. SHEPHERD: Mr. Chairman, before I go
5 on, I would like to introduce Dr. Chris Chapman from
6 the University of South Hampton who is assisting me on
7 some aspects of this cross and he is seated to my
8 right.

9 Q. Mr. Snelson, we had a discussion
10 yesterday - which believe me I'm not going to reprise -
11 on your priorities as between various types of options.

12 And I'm getting the sense - and tell me
13 whether I have got this right - I'm getting the sense
14 that you make decisions on whether to proceed with new
15 facilities or indeed any option, including a life
16 extension or something like that.

17 As I understand it, what you do is you
18 have a menu of acceptable options and you choose from
19 that menu the package that gives you the best overall
20 result with all criteria taken into account. Is that
21 right?

22 MR. SNELSON: A. Yes. In putting
23 together the comprehensive plan, we do look to see
24 whether the package overall has the right balance.

25 Q. And you are choosing from a menu of

1 acceptable options that you prevented?

2 A. A menu of acceptable options,
3 sorry...?

4 Q. That you have vetted in advance so
5 that there are some options that you have taken off the
6 menu because they are way too costly or they are not
7 environmentally acceptable or whatever?

8 A. At the stage of putting together
9 plans we may have formed some opinions as to some
10 options that are not likely to be part of the package
11 and not considered further.

12 Q. Okay. And you ask yourself questions
13 like: Is it better overall to get 1,000 megawatts more
14 demand management in NUGs or to get 1,000 megawatts
15 through the Manitoba Purchase. You ask that sort of
16 question of yourself; right?

17 A. When we were negotiating the Manitoba
18 Purchase we specifically addressed the question of how
19 the system would develop with the Manitoba Purchase and
20 without the Manitoba Purchase and what the differences
21 would be.

22 Q. So it's not a choice between options
23 then, it's a yes or no choice on a given option?

24 A. The specific analysis of the cost and
25 value was done on that basis, there were also

1 comparisons made in broad terms with other options
2 which I believe are discussed in the relevant exhibit.

3 Q. Okay. And that relevant exhibit that
4 answers that question, do we do this or do we do that,
5 for Manitoba, that's 442.7; right?

6 A. That is the latest evaluation. The
7 original evaluation was Exhibit 434.3.

8 Q. Okay. But that's what a decision
9 analysis looks like from your point of view?

10 THE CHAIRMAN: And 434.3 is 286; is it?

11 MR. SNELSON: It's the system planning
12 report 686.

13 THE CHAIRMAN: 686.

14 MR. SNELSON: Yes.

15 MR. SHEPHERD: Q. And that's a decision
16 analysis; right, that's how you make the decision or
17 that's the documentation of how you have traded off
18 everything in that decision?

19 MR. SNELSON: A. Yes.

20 Q. And you decide whether to proceed
21 with any option in basically the same way; correct, you
22 do a formal decision-making process to determine: Do
23 we do this or not?

24 A. At the time of the commitment of an
25 option, yes, we do that.

1 Q. Well, at the planning stage do you do
2 that?

3 A. At the planning stage we may not do
4 that for each and every option because we are not
5 making the commitment to each and every option, we
6 would be looking at overall plans and we may look at a
7 number of different overall plans with different
8 balances.

9 Q. So your decision isn't final so you
10 don't have to be as rigorous. Is that a fair
11 characterization?

12 A. The decisions are reviewed at various
13 stages through the development of plans and projects
14 and they are reviewed -- for instance, a plan will be
15 put together which is the current view and it will
16 include various options at various stages of
17 development ranging from those that are committed
18 through to those that are in some form of approval
19 process to those for which the approval process has not
20 yet been started. And in parallel with that we will
21 also be doing evaluations with respect to specific
22 options, and as the option itself - let's say it's a
23 hydraulic generating plant - there will be a decision
24 made at the start of the definition phase: Is this a
25 good enough option that we should proceed through the

1 definition phase?

2 And we would make a specific decision and
3 there would be some analysis associated with that, and
4 if that was yes, then that would lead to the
5 development of the environmental assessment and the
6 site-specific hearing.

7 And once approvals have been obtained,
8 there's a commitment decision to make: Should we
9 commit the construction of this option, and that is
10 where the most rigorous decision analysis is probably
11 done because that's where the biggest commitment is
12 being made.

13 Q. Okay. So, for example, on fossil
14 life extensions a number of people have asked: Do you
15 have something equivalent to the analysis in 442.7 for
16 fossil life extensions, and you don't; right?

17 MR. SHALABY: A. We indicated an
18 interrogatory that has evaluation of the fossil life
19 extension.

20 Q. Yes, and you have also indicated --

21 A. 8.9.119, I remember.

22 Q. That's right. And you have also
23 indicated in your evidence that it's a much more
24 rudimentary analysis that we see for Manitoba; correct?

25 A. I accept that, yes.

1 Q. Okay. And one of the reasons you can
2 do that is that you are going to have another kick at
3 that decision later; aren't you, when you have more
4 money to commit?

5 A. Also not all the variables are very
6 clear or all the parameters are well understood, so the
7 extent of the analysis is commensurate with how much
8 you know about the problem as well.

9 Q. But it's also commensurate; isn't it,
10 with the amount of money and the amount of time and
11 effort and risk involved in what you are deciding to do
12 at this point. Right?

13 A. I accept that, yes.

14 - Q. Okay. Now, let's move from Ontario
15 Hydro's perspective where you have this series of
16 decision points to this Board's perspective.

17 Now, this Board is being asked to make
18 decisions on a plan that has a number of things in it;
19 right?

20 MR. SNELSON: A. This Board I believe is
21 being asked to give approval for some specific
22 facilities and that has to be done within the context
23 of an overall plan. We think that is what is useful.

24 Q. Okay. And this Board, except with
25 Manitoba which is an unusual situation, is presented

1 with the more rudimentary analysis because that's the
2 only place you are at right now; right?

3 A. When one is looking at a broad plan
4 without specific details and one is trying to decide on
5 the broad direction to go, then one should be looking
6 at general information, and that's what we have brought
7 forward.

8 Q. I understand. But you are asking
9 this Board to say go ahead and build 1,800 megawatts of
10 hydraulic; right?

11 A. We are asking this Board to give
12 approval of the rationale and need for 14- to 1,800
13 megawatts of hydroelectric capacity.

14 Q. Right. And once that approval is
15 given, if it is, that approval will never again be
16 considered; will it, by any other independent body, it
17 will then be left in Hydro's hands to make the more
18 rigorous analysis later on; correct?

19 A. The more rigorous analysis we are
20 referring to is the specific analysis of specific
21 hydroelectric projects, and my understanding is that we
22 were somewhat constrained in how much site-specific
23 information we could bring to this hearing.

24 Q. Okay. Are you familiar with the
25 concept of zero-based planning? Do you know what that

1 means?

2 A. That may mean different things to
3 different people, so...

4 Q. Okay, let me --

5 A. I have some broad concept but I'm not
6 sure whether it's the same as yours.

7 Q. Let me describe the concept as I
8 understand it, as referring to planning which assumes
9 at any given point in time that absolutely all options
10 are available to you, including things like closing or
11 ramping back existing units, selling them off,
12 increasing your demand side controls, and implementing
13 supply side options.

14 - Do you understand what I mean by the
15 concept, nothing is off the table, start from zero?

16 A. I believe that that is what our
17 demand/supply option study that has led to this process
18 has been, yes.

19 Q. Okay. Well, you never considered in
20 any of your planning process let's model the system on
21 the assumption that we close Bruce "A"; have you?
22 That's not one of the options on the agenda?

23 A. No, though the analysis of the
24 decisions with respect to continuing to keep Bruce "A"
25 open has considered that possibility.

1 Q. All right. But we are not talking
2 about that decision, we are talking about your
3 planning. In your planning you haven't modelled that?

4 A. The planning is the totality of all
5 the planning that we do, and we have brought a very
6 large volume of material to this hearing. There are
7 other aspects of planning that are still captured that
8 aren't necessarily relevant to the approvals is being
9 sought.

10 Q. You haven't at any time put forward
11 the possibility and modelled it as a possible plan the
12 phase-out of all existing coal generation in order to
13 manage CO(2) and acid gas problems; have you?

14 A. We have considered in your decisions
15 to rehabilitate Lakeview generating station the
16 possibility that it might be closed.

17 Q. That's not the question I'm asking.
18 You haven't modelled that more radical change to your
19 system; have you?

20 Let's just stop with coal, phase it right
21 out.

22 MR. DALZIEL: A. I think in Exhibit 3,
23 Case 23, goes some way to what you are describing.

24 Q. Does that propose the phase out of
25 coal?

1 A. It showed a very heavy reliance on
2 nuclear generation in the future and the retirement of
3 existing fossil facilities on their 40th anniversary.

4 Q. Yes.

5 A. So in the long run there was a
6 significant decrease in the fossil facilities.

7 Q. Okay.

8 A. I would say essentially a phase-out
9 of the fossil facilities.

10 Q. So that's like saying, what if we
11 choose an all nuclear system as opposed to the sort of
12 more balanced system we have today; right?

13 A. It's representative of that, yes.

14 Q. It's not saying, what if we make this
15 assumption, no more coal, now what are we going to do,
16 let's see what the options are; is it?

17 A. It's one way of indicating the future
18 without coal.

19 Q. Is it possible, Mr. Snelson -- let me
20 rephrase this. The way you do your planning, is there
21 any way that you can tell whether very radical changes
22 in your approach to the system would produce a better
23 system either environmentally, economically or
24 whatever. Do you have some sort of way of determining
25 that?

1 MR. SNELSON: A. We did look at some
2 quite radically different types of system in the work
3 that preceded the demand/supply planning strategy.

4 Q. Such as...?

5 A. We looked at systems which provided
6 all of the requirements from new supply options with no
7 demand options, we looked at systems which relied
8 entirely upon demand options for new facilities and
9 avoided completely new supply options. There's two
10 examples.

11 Q. Suppose you decided to - this is just
12 an example - suppose you decided to phase-out coal and
13 replace it with demand management renewables, and
14 high-efficiency gas exclusively, nothing else, if you
15 did that one of the results would be a very high demand
16 in Ontario for demand management renewables and
17 high-efficiency options; correct?

18 A. I presume so.

19 Q. And typically one effect of
20 increasing the volume of your procurement of those
21 options in the long term - I understand there's a
22 short-term price impact - but in the long term,
23 typically that means prices will go down; right?

24 A. I'm not an economist. I think that
25 the effect of increased demand can either be to lower

1 costs or increase costs.

2 Q. If you decided today that you were
3 going to have 5,000 megawatts of fuel cells by 2015 --
4 sorry, 2014 in deference to my friends, 5,000 megawatts
5 of fuel cells, that decision alone would typically;
6 isn't it true, it would typically have the result that
7 the technology would advance and the cost would go
8 down?

9 A. The world-wide effort into developing
10 fuel cells is such that I don't think that what Ontario
11 does will have a very substantial effect on the
12 development of that technology.

13 Q. You haven't modelled anything like
14 that?

15 A. We did include a component for fuel
16 cells in the enhanced plan.

17 Q. No, I'm sorry, I was describing a
18 very radical shift where you say: We are just going to
19 close our coal stations and go directly to this sort of
20 green energy package. You haven't modelled that; have
21 you?

22 A. Explain to me again the
23 characteristics of the system. I'm thinking of the
24 various cases that we have done through time, and I'm
25 just wondering what we have got that --

1 Q. We are going to phase out coal, let's
2 say, over the next 10 years, by the end of 10 years no
3 more coal.

4 A. Well, I think the scenario Mr.
5 Dalziel pointed to of a very high level of construction
6 of nuclear plants such that the energy production from
7 coal would be much reduced, is one situation that is
8 somewhat close to that.

9 Q. But I didn't ask you that. I
10 proposed a hypothetical where you phase out coal, you
11 replace it with this package of sort of environmentally
12 preferred options.

13 A. We did look at -- sorry, phase out
14 existing coal?

15 Q. Phase out existing coal, replace it
16 with all new supply with a package of more
17 environmentally attractive options, demand management,
18 renewables and high efficiency.

19 A. We have looked at distributed cases
20 which rely upon gas-fired options and demand
21 management.

22 These probably wouldn't phase things out
23 as fast as your hypothetical though.

24 Q. Has Hydro ever had a person or a
25 group of persons with the, internally, express

1 responsibility of challenging the accepted wisdom and
2 proposing radical changes, sort of a radical change
3 division; right, have you ever had anything like that?

4 A. No. We have some people in the
5 organization who have some pretty radical ideas at
6 times, but I don't think we have ever put them
7 altogether in one place.

8 Q. I thought they were all in the
9 nuclear division.

10 What do you think, Mr. Snelson, of the
11 wisdom of Hydro establishing sort of a think tank of
12 people whose job is to challenge conventional wisdom,
13 who are given resources and a mandate to do that.

14 I'm asking you from a planning point of
15 view, obviously your planning is going to be affected
16 by the views within the organization and by the sort of
17 input you get, conventional versus unconventional.

18 I'm asking you, how would that affect you
19 as a planner; would it improve your planning, your
20 thought processes, et cetera?

21 A. It's not really a question that I
22 have addressed in those terms. I don't have an
23 opinion.

24 [4:13 p.m.]

25 Q. It's true, isn't it, that there are

1 companies around the world, particularly large
2 companies that have exactly such a system, sort of a
3 radical change division that has exactly that mandate,
4 are you familiar with that?

5 A. No, I am not.

6 Q. Well, how do you ensure that the
7 people who are making decisions like yourselves or like
8 the people who are giving you input as to costs, as to
9 ways of doing things, et cetera, aren't just stuck in
10 the conventional approach to things? How do you ensure
11 that?

12 A. We did, in preparing the
13 Demand/Supply Plan, precede it, for instance, with
14 processes such as the thermal cost review and the
15 nuclear cost inquiry. And through those processes,
16 people were challenged with respect to the practices as
17 to preparing cost estimates and so on, in that process.
18 And that is an example. I cannot say that is
19 comprehensive, but that is an example.

20 Q. We, obviously, have different
21 concepts here. I'm talking about radical change.
22 Certainly ONCI and the thermal cost review were not
23 being done by a bunch of radical crazies, were they?
24 They were being done by people who had the normal
25 conventional views of many of the issues being dealt

1 with, correct?

2 MR. SHALABY: A. Mr. Shepherd, I think
3 if we sort of recall planners or corporate executives
4 or people in Hydro that maybe left the company 5 or 6
5 or 10 years ago come and see our plans today, they
6 would certainly say this is a radically different plan,
7 radically different thinking than what they are used
8 to.

9 The product in front of this Board today
10 is a radically different plan from, I don't know what
11 you call conventional; but for a utility to be relying
12 on a demand management non-utility generation that we
13 are, and the partnership we want to work with, with our
14 customers and with the private sector, that is, indeed,
15 radical.

16 I don't know how much more radical you
17 want you to get. But for a utility the size of Hydro,
18 to change in the short number of years in the late 80s
19 and early 90s, I consider that radical change.

20 Q. There is certainly a number of
21 utilities in the United States that have gone a lot
22 farther than you have, aren't there?

23 A. The entire utility industry has made
24 a radical move.

25 Q. So you are sort of still in the pack,

1 aren't you?

2 A. We are in front of the pack in many
3 aspects and perhaps in the middle of the pack in other
4 aspects.

5 Q. Okay.

6 A. Just this image that there is no
7 challenge of conventional wisdom, I reject that. The
8 company is full of ideas and innovations, whether it's
9 in normal day-to-day activities or the research
10 division or the corporate planning branch or many other
11 parts of the company come with different ideas. And
12 many of them have found their way into the corporate
13 plan that you see in front of you.

14 - Q. One of the areas that is of
15 considerable concern to you, isn't it, is how you
16 manage uncertainty?

17 A. Yes.

18 Q. And that's been of concern to Hydro
19 for some years, right?

20 A. Yes.

21 Q. In fact, am I right that for the
22 first time you are actually in the process now of
23 formally studying it, announced in March to be
24 completed in July?

25 A. Studying what?

1 Q. A formal study of how you manage
2 uncertainty.

3 A. I wouldn't think this is a first
4 time, no. The label on the group may be different from
5 time to time, but I indicated in my evidence, and I
6 repeated here, that managing uncertainty is the ongoing
7 business of the company. That's something that we do
8 day-to-day, have done in the past and will continue to
9 do in the future.

10 Q. That study of how you will manage
11 uncertainty in the future, that, obviously, was not in
12 place at the time you did the DSP Update, right? It
13 couldn't have been; it was just started.

14 - A. Maybe we can inform others what we
15 are talking about here. Are we having a private chat
16 to the exclusion of others -- what is it that you mean
17 by the study group?

18 Q. Maybe I have misunderstood. You have
19 agreed, haven't you, that a study was instituted in
20 March by management specifically on the management of
21 uncertainty to report in July to the senior management
22 committee; correct?

23 A. Without knowing exactly when this
24 started and when they are to report, that management of
25 uncertainty is something that was associated with the

1 development of the Update under that heading, the word
2 management of uncertainty. And perhaps formally there
3 has been a group assigned to work out some details,
4 work out some scenarios and report back to the business
5 planning workshop of the company.

6 Q. And I presume that the results of
7 that study will be tabled before this Board?

8 A. I don't know that.

9 Q. I wasn't clear. Are you familiar
10 with the study I'm talking about?

11 A. I am familiar that there is a group
12 of managers and senior people that are meeting
13 frequently to discuss that subject and to be of
14 assistance to the business planning process of the
15 company.

16 What they would produce -- and that's why
17 I am hesitant to say the results will be available to
18 this hearing. I don't know whether there would be a
19 product that would be of assistance to this hearing.
20 If there is, it would be made available. If there
21 isn't, there isn't.

22 Q. I do want to talk about the DSPS. I
23 haven't left that document yet, except in spirit,
24 perhaps. But I would like to explore the idea of
25 goal-oriented planning. And let me get to it this way.

1 As I understand your current planning approach, this is
2 at sort of a macro level, first you determine what the
3 demand for your product will be in the future. Second,
4 you investigate what steps you can take to modify that
5 demand through demand management programs, et cetera,
6 and third, you take the gap between supply and demand
7 that remains and determine what is the appropriate mix
8 of supply options that are best used to fill it. Have
9 I got the crude sketch right?

10 MR. SNELSON: Yes. I think there is
11 finer detail with respect to non-utility generation and
12 hydraulic and there is the examination of the resulting
13 product to see whether it is balanced and integrated
14 and whether there is some need to go back to the
15 beginning of that process and repeat.

16 Q. Now, this type of planning is driven
17 at the outset by the concept of filling a need, right?

18 A. It's driven by the forecast of the
19 needs for electricity services by the people of
20 Ontario.

21 Q. Would you agree that it's just as
22 valid conceptually to decide first what you want your
23 demand and supply system to look like at a certain
24 point in the future and all its attributes and then
25 develop a set of steps to get there? Would that be

1 just as valid?

2 A. I am not sure that would be
3 consistent with meeting the needs of our customers. We
4 start out with what are the needs of the customers and
5 how we best meet them. And that is what we see as our
6 primary function.

7 Q. So I take it, then, that you believe
8 that this concept of filling a need as a planning
9 approach is intrinsic to you what you do. It's not
10 something that you could challenge because it's just
11 something that you have to do.

12 A. I believe that the corporate goal,
13 for instance, is to talk about meeting the needs of the
14 people of Ontario for electricity services. And
15 Exhibit 74, I think, has that stated somewhere.

16 Q. Undoubtedly.

17 A. Pardon?

18 Q. Undoubtedly. I accept that that's
19 basic to your planning. You do not need to quote the
20 DSPS, unless you want to.

21 A. I cannot turn it up this quickly, but
22 I believe that that is stated as the corporate goal.

23 Q. Now, in project planning, unlike
24 system planning, you do have a very clear picture of
25 what you are going to end up with, right? You have a

1 hydraulic station. And it has certain attributes. And
2 you decide what it is, what it is going to look like,
3 what sort of thing you are going to end up with. And
4 then you develop strategies for how you get to that
5 thing, right, which can include decision points where
6 you have uncertainties and things like that. But
7 ultimately you know exactly where you are going to end
8 up, right?

9 A. Well, when you start planning a
10 hydraulic facility, then you usually start from
11 identifying a stretch of river that has a sufficient
12 flow and a sufficient dropping in head of the river.
13 And there can be several alternative ways of developing
14 that hydraulic potential. One generating station that
15 develops the whole head, several generating stations
16 spread along the river, there can be a variety of
17 options.

18 Q. You could say, couldn't you,
19 something like this: By the year 2005 we want to have
20 a system that has a specific generation mix, let's say
21 50 per cent renewables, 30 per cent nuclear, and 20 per
22 cent large hydro, that meets certain environmental
23 targets that we will establish today, that has a
24 particular overall demand for electricity, let's say a
25 110 per cent of present demand, and has the lowest

1 possible short- and long-term cost. You could make
2 that decision today, paint that picture right now,
3 couldn't you?

4 A. You could paint such a picture. I'm
5 not sure what you would achieve by doing it.

6 Q. Well, once you did that, you could
7 then establish a series of plans to meet that, couldn't
8 you?

9 A. Well, I think if I was an executive
10 for Ford Motor Company and I was considering opening a
11 plant in Ontario and I was told you cannot have
12 electricity supplied in Ontario because Ontario Hydro
13 did not include your demand in its plans; it planned on
14 only 80 per cent of the expected demand in the year
15 2010 and so we do not have room for that motor company
16 planned in Ontario, I am not sure that is consistent
17 with our mandate.

18 Q. So you can't control your demand?

19 A. We can, we do assist our customers to
20 reduce the amount of electricity that is used in
21 providing a given level of electricity service. And we
22 may advise customers in terms of what we think are
23 appropriate ways of using electricity in other ways.
24 But I think that when it comes down to it, our purpose
25 is to provide the electricity services that our

1 customers need.

2 Q. Well, isn't that inconsistent with
3 your demand management programs? You said, our plan is
4 we are going to have 4,800 megawatts of demand
5 management by the year 2000, or whatever it, and we are
6 going to do it. So isn't that exactly what you just
7 said you can't do?

8 A. No. We forecast the level of basic
9 demand, which is the level of electricity services that
10 we believe our customers need, and we will meet that
11 level of basic demand by some mix of increased
12 efficiency which allows that electricity demand to be
13 met, that electricity service demand to be met by less
14 electricity, and some mix of supply options that
15 actually generates the electricity to meet those
16 services.

17 But the level of electricity services
18 which are required which is essentially the forecast of
19 basic demand is what we see as being our forecast of
20 what our customers need. And we recognize there are
21 uncertainties; it might be higher, it might be lower.
22 And those uncertainties are quite large. But our
23 purpose is to meet the needs of our customers.

24 Q. So I take it, then, that you say you
25 can identify a certain amount of control of demand,

1 demand management, that you are capable of doing; and
2 once you have identified that, you can work to achieve
3 that goal and, in fact, achieve it. But that you can't
4 take as your goal what the ultimate demand is, the
5 overall demand, and achieve that goal in the same way,
6 because the amount that you have to achieve is
7 uncertain.

8 [4:28 p.m.]

9 A. Yes, that's the way our planning
10 process works.

11 Q. Okay. I know that is how your
12 planning process works--

13 A. Yes.

14 Q. --I'm asking you whether you could do
15 that?

16 A. I don't believe that would be
17 consistent with meeting the needs of our customers.

18 Q. Okay. So I take it then that demand
19 management is not an appropriate response option for
20 upper load growth?

21 A. Yes, it may be.

22 Q. It may be?

23 A. Yes.

24 Q. All right. How do you reconcile that
25 with what you have just said?

1 A. Well, it may be that under upper load
2 growth conditions it would be worthwhile Ontario Hydro
3 encouraging electricity efficiency options, say, which
4 were additional to the ones that would be implemented
5 in median load growth.

6 That would still be supplying the level
7 of basic electricity demand, still be supplying the
8 electricity services that people want, and the whole
9 principle of demand management that we work with is
10 that we are trying to find the best balance of demand
11 and supply to meet the electricity services
12 requirements.

13 Q. All right.

14 DR. CONNELL: I wonder, Mr. Shepherd, can
15 I just interpolate a question--

16 MR. SHEPHERD: Sure.

17 DR. CONNELL: --that I think is relevant
18 to yours?

19 Perhaps I could put this to Dr. Long.
20 I'm intrigued by Mr. Shepherd's concepts of transition,
21 fairly radical transition.

22 And if we could just assume that Hydro
23 has in place a particular generating station, but let's
24 assume that it's carried on your books as an asset
25 valued at, let us say, a billion dollars at the present

1 time.

2 I assume if you could do the bookkeeping
3 to isolate that plant, that it would also be generating
4 cashflow from the sale of that energy which would --

5 DR. LONG: We don't do the accounting
6 that way.

7 DR. CONNELL: I know you don't, but
8 inasmuch as your revenue more or less meets your
9 expenses, on average that would be the case; wouldn't
10 it?

11 DR. LONG: Well, we can certainly track
12 the costs associated with the plan.

13 DR. CONNELL: Yes.

14 - DR. LONG: And, as you say, you somehow
15 or other equate that part of the revenue.

16 DR. CONNELL: Yes. So this billion
17 dollar asset would be matched on the other side of the
18 balance sheet with a certain amount of debt, a certain
19 amount of imaginary equity, and you might need a
20 cashflow of, let us say, a hundred million a year to
21 cover the debt service and the return on equity,
22 just as a rough --

23 DR. LONG: We don't have an explicit
24 return on equity, but I understand what you mean, yes.

25 DR. CONNELL: Yes. So if you decided

1 then to phase out that plant - and I'm going to use
2 here the concept of overnight - let's suppose you did
3 it overnight and replaced it overnight, you would in
4 effect be writing off that billion dollar asset and you
5 would have to find some other way to deal with the debt
6 service and the return on equity?

7 DR. LONG: That's correct.

8 DR. CONNELL: Now, if you were going to
9 replace it overnight with some other type of
10 installation - let's assume there is a \$2 billion
11 installation because it's going to be brand new and
12 have bells and whistles - and if you wanted to have
13 that installation cover your cashflow, it would have to
14 cover not only the 2 billion that it cost in capital
15 but also the billion from the one you phased out.

16 In other words, you would have to
17 generate 50 per cent higher revenue than would be the
18 case it were simply a green field's project.

19 DR. LONG: I think I understand what you
20 are saying.

21 I guess the hypothetical would depend on
22 exactly -- you said overnight, and the treatment of the
23 write-off would certainly depend on the particular
24 circumstances and the particular period of the phase-in
25 or the phase out.

1 But you are right, if nothing else
2 changed we would have, as you put it, a \$3 billion
3 asset that needs the requisite debt servicing and so on
4 associated with it and our revenues would have to
5 reflect that.

6 DR. CONNELL: Can you go on from there,
7 just imagine generally - it sounds unattractive - but
8 might there be a set of circumstances if this plant
9 were - I have been assuming up to now that, say, all
10 environmental considerations were equal and let's carry
11 on with that assumption - but let's suppose this plant
12 were inefficient in various ways, or in need of serious
13 capital upgrade, let's say its outrage rate was very
14 high so that in fact, again, if you could isolate the
15 revenue it might be seriously deficient in meeting the
16 required cashflow for debt servicing?

17 DR. LONG: According to, again, the Power
18 Corporation Act our revenue requirements are explicitly
19 designed to recover all of our costs. So if the costs
20 of running that plant were to increase, we would have
21 to increase our revenue requirements accordingly to
22 cover that.

23 So that the concept of a revenue
24 shortfall is a little alien.

25 DR. CONNELL: No, but if you had 10

1 plants and one of them was in effect costing you
2 money--

3 DR. LONG: On average.

4 DR. CONNELL: Then the other nine might
5 be--

6 DR. LONG: Subsidizing it.

7 DR. CONNELL: Yes.

8 DR. LONG: Okay, I think I understand
9 the concept.

10 DR. CONNELL: So if you had a set of
11 circumstances in which this one plant was financially
12 defective in that way, and if you could be convinced
13 that this overnight replacement was one that was
14 capable of generating the revenue, it was so efficient
15 that it could generate the revenue, it could look like
16 an attractive proposition?

17 DR. LONG: If the plant has a net book
18 value and overnight you would replace it with
19 something, to use your example, the \$1 billion old
20 plant with a \$2 billion new plant, we would still have
21 the associated unrecovered capital on our books and
22 that would still have to factor into our revenue
23 requirement calculations.

24 If, on the other hand, the new plant had
25 some other benefits associated with it, say for

1 instance, much lower fuel costs, I think you would have
2 to look at the sum total of all of the revenue
3 requirement components associated with both the old
4 plant, as compared to having the old plant still on the
5 books plus the new plant and its associated fueling
6 costs. You would have to look at it in total.

7 I guess theoretically it's not impossible
8 that you could get an overnight favourable situation,
9 but I think the more likely situation is that if it
10 were the case that the long-term economics dictated
11 that the replacement of the plant seemed to make sense,
12 I think it's much more likely that, the way we would do
13 our accounting and determine our revenue requirements,
14 that doing that overnight would result in some
15 increased revenue requirement, higher rates at least in
16 the short term, but certainly over the balance of the
17 life of the asset it's possible that this favourable
18 effect would eventually result in lower rates in the
19 long term, if that's the case.

20 DR. CONNELL: So again, setting aside for
21 the moment any environmental considerations, do you
22 think it's possible that Hydro has missed any good bets
23 of that sort within the last five years or even looking
24 ahead?

25 DR. LONG: I'm certainly not aware of

1 any.

2 MR. SNELSON: The way we would actually
3 approach making the decision, the principal economic
4 method we would use to make that decision - and, of
5 course, we would look at the rate impacts that Dr. Long
6 has been talking about - but the principal indication
7 of economics would be the present value economic
8 assessment based upon the current situation, and so we
9 would be comparing the additional costs of continuing
10 the operation of the existing facility, including any
11 rehabilitations that are not yet committed, versus all
12 the uncommitted cost - which is probably the whole cost
13 of the new facility - and in your example, the one
14 billion dollars of unrecovered capital is on the books
15 from its original cost still, would actually not be a
16 component of that economic decision.

17 DR. CONNELL: Yes.

18 MR. SNELSON: Though, of course, there
19 may be financial implications that Dr. Long has been
20 talking about.

21 DR. CONNELL: Right, thank you.

22 MR. SHEPHERD: Q. It's not unusual, Dr.
23 Long, for utilities to close plants early because the
24 economics say it's better to replace them with
25 something else. That happens?

1 DR. LONG: A. I think it happens for
2 sure, yes.

3 Q. Yes. Nor is it unusual for
4 utilities, including Ontario Hydro, to close facilities
5 for environmental reasons?

6 A. Personally, I'm not aware of us
7 closing anything for environmental reasons, but it
8 could certainly be possible. Yes, I'll agree to that.

9 Q. Okay. Mr. Snelson, you were talking
10 about the possibility of painting the future you want
11 to get to and then getting there, we were talking about
12 the demand management side of that, and you refer to
13 your basic job as to meet the needs of your customers.

14 - It is true; isn't it, that your job is
15 satisfied if your customers' energy service needs have
16 been met, whether they meet them themselves, you meet
17 them, or they are met from other sources; correct?

18 MR. SNELSON: A. Are you referring here
19 to energy services or electricity services?

20 Q. Energy services.

21 A. Energy services. Yes, it is possible
22 that some of the needs for energy services are
23 shiftable between electricity and other fuels and
24 that's the fuel switching component of our demand
25 management plan.

1 Q. Or they could meet their energy
2 services needs by being more efficient with their
3 existing energy; right?

4 A. Well, if it's reducing the use of
5 electricity and the existing electricity use, then
6 that's electricity use efficiency which is part of our
7 demand management program.

8 Q. Exactly. And isn't it true that
9 aside from the cost question, Ontario Hydro is
10 basically in a position where it can achieve any, even
11 quite radical future without the lights going out;
12 isn't that right?

13 Thinking long term now, you have enough
14 time to make the decisions and spend the money. If you
15 are willing to spend the money, the lights won't go
16 out; right?

17 A. You have to also be able to get
18 approvals and the amount of money you might have to
19 spend might be very large.

20 Q. Yes. But there aren't any long-terms
21 futures; are there, that we could reasonably
22 contemplate in which the lights would simply go out;
23 are there?

24 A. Yes, I think there are long-term
25 futures where the lights could go out.

1 Q. Aside from global nuclear war, can
2 you suggest some?

3 A. We certainly had situations in the
4 1940s when the lights were going out fairly regularly,
5 and that was caused by a high growth in demand at a
6 period when there was an inability to build new
7 generation.

8 Q. And when you were in that situation
9 you have a choice; right, you can reduce your
10 reliability or you can increase your cost and maintain
11 your reliability; isn't that true?

12 A. Provided that you can get the
13 approvals you need in time and lead times of
14 construction are such that you can do that.

15 DR. CONNELL: If you can borrow the
16 money.

17 MR. SNELSON: That could also be a
18 constraint. There are many parts of the world today
19 where the lights go out regularly for a variety of and
20 combination of these reasons.

21 MR. SHEPHERD: Q. Okay. One of the
22 problems I have heard described of this sort of
23 goal-oriented planning, where you try to achieve a
24 particular type of system, is that maybe the goals have
25 to be set by someone other than the utility.

1 And isn't it true, in fact, that if you
2 were to make some sort of shift, let's say to a radical
3 reduction in CO(2) and the things that would go along
4 with that, that it would be Ontario Hydro's view that
5 that goal should be set by someone other than Ontario
6 Hydro. Is that generally correct?

7 MS. HOWES: A. I think we'd probably say
8 we'd want the input from others and Ontario Hydro might
9 well contribute to that goal, but if you are using
10 CO(2) it's obviously a global issue and I would imagine
11 that input should be sought from various levels of
12 government and others, you are right.

13 Q. I'm asking who should make the
14 decision; Hydro or the government or a Board like this,
15 or who, in Hydro's view?

16 A. In Hydro's view. I don't think I can
17 give you Hydro's view, I can give you an opinion.

18 Q. Okay, close enough.

19 A. Close enough. I speak for Hydro. I
20 would say it's probably a multi-stakeholder group. I
21 don't imagine that it would be one group exclusively.

22 Q. Okay. Are you describing the
23 consensus, or are you describing a process of
24 consultation with one person having the ultimate
25 responsibility to say: This is what we will do?

1 A. Multi-stakeholder often works on a
2 consensus basis.

3 Q. If this Board were to say as a result
4 of the evidence before it that it's a condition of your
5 approvals or it's something that it requires you to do,
6 that you cut your CO(2) emissions in half within 20
7 years, you could design a plan to do that; couldn't
8 you?

9 MR. SNELSON: A. Yes, provided the load
10 was reasonably close to that that was forecast.

11 Q. And it's true; isn't it, that you
12 could design plans to achieve that that were
13 sufficiently flexible that you could still achieve the
14 goal even with high load growth; right?

15 A. You might need a very high degree of
16 approvals or a very high degree of preparing for other
17 options, yes.

18 Q. But you could do it?

19 MS. HOWES: A. I think this also lies
20 into the all things being equal. I think if it was a
21 condition from this Board, there would probably also be
22 a requirement or some consideration of other industries
23 also to cut back on their CO(2) emissions, and if it
24 resulted in, for example, the transportation sector
25 moving to electric cars, we would have probably a very

1 difficult time achieving a CO(2) target because of
2 other industries moving off fossil fuels to
3 electricity, and then we would be looking at
4 considerably different perspectives.

5 So I think there must be some conditions
6 on this particular question that you are asking.

7 [4:47 p.m.]

8 Q. But if you had that sort of bald
9 condition and accepting that in some futures it could
10 be very difficult to achieve, you would still achieve
11 it, right? You wouldn't be coming back to the Board
12 saying sorry, we can't do it. You could still achieve
13 it.

14 - MR. SNELSON: A. There could be a lot of
15 conditions on how we could achieve that. For instance,
16 if you were to take all our coal-fired plant, and let's
17 say that the forecast was that the use of coal in other
18 circumstances was going to increase by 50 per cent from
19 today's levels, and you were to say, well, we can
20 replace that with combined-cycle gas, non-utility
21 generation at about half the emissions per unit of
22 electricity of the coal, then we could reduce our coal
23 emissions but they would only be down to about 75 per
24 cent, that's 1-1/2 divided by 2.

25 Q. Yes.

1 A. 75 per cent of current levels. And
2 you would need to have options that had even lower
3 carbon dioxide emissions and combined-cycled gas.

4 Q. So you might have to go after fuel
5 cells with more effort or solar.

6 A. Or nuclear.

7 Q. Or nuclear. I'm going to get to
8 nuclear.

9 A. Yes. And in some of those cases,
10 when we need approvals from this Board or some other
11 environmental assessment board and other bodies to
12 achieve it

13 Q. All right. So what you are saying is
14 it is difficult to do. It could be difficult to do.

15 A. It could be difficult to do. It
16 would have a lot of implications.

17 Q. And I guess the final step in this
18 example is, the same condition but in a context of a
19 permanent moratorium on new nuclear, you could still do
20 it, couldn't you?

21 A. If cost were no object, you may still
22 be able to do it.

23 Q. Of course. That's what you do with
24 things like acid gas and other things; you work with
25 the government or the regulator, whoever it is, on what

1 limits will be placed on you, but ultimately you have
2 to accept their decision and get on with the job,
3 right?

4 MS. HOWES: A. Generally, yes.

5 Q. Now, I have asked about CO(2), but I
6 presume the same answer is given if we contemplate this
7 Board establishing a full range of environmental
8 standards that they would expect you to meet in your
9 planning. A full range, even if reasonably tough
10 standards. Again, you would just get on with the job
11 and do it, right?

12 A. I am assuming that these standards
13 are not conflicting and that money is no object.

14 Q. Well, of course. Presumably the
15 Board would not present you with a set of standards
16 that were completely ridiculous. I think we have to
17 take that as assumed.

18 A. Certainly. I am just wondering why
19 you modified it by saying "completely ridiculous."

20 Q. Very nice.

21 A. But presumably we would work within
22 the conditions that would be provided.

23 Q. Now, Ms. Howes, you talked in your
24 direct evidence about the fact that ultimately
25 achieving certain environmental goals involves trading

1 off other environmental goals. And you gave the
2 example of CO(2), which ultimately CO(2) controls can
3 increase acid gas and can increase solid waste, isn't
4 that right?

5 A. I don't think I said that. I think I
6 was suggesting, for example, if you installed scrubbers
7 you were solving an air problem but you were now
8 creating a solid waste problem.

9 Q. Fair enough. But it is true, isn't
10 it, that in this hypothetical set of standards you
11 could still meet them all even though solving one makes
12 one more difficult to solve, you could still solve them
13 all, right?

14 - A. I am not certain. You would have to
15 give me some more information on what your hypothetical
16 considers. For example, I don't know what sort of
17 waste we would have to be dealing with to so say that
18 yes, it is, indeed, solvable. So I'm not prepared to
19 agree to your point.

20 Q. Ultimately, it all boils down to
21 cost, though, doesn't it?

22 A. Cost, as long as you are assuming
23 that there is the technology and the know-how to solve
24 some of these problems now.

25 Q. So some of these problems we just

1 don't know what the solution is yet.

2 A. I think that's a fair statement, yes.

3 Q. Nuclear fuel.

4 A. I would say it is fair to say that we
5 do not have an approved long-term disposal facility
6 available within Canada, yes.

7 Q. CO(2).

8 A. CO(2)?

9 Q. Yes.

10 A. I would say there is no technology,
11 for example, commercially available to scrub CO(2) at
12 this point, yes. There is also a significant waste
13 problem associated with scrubbing CO(2) that hasn't
14 been adequately resolved, yes.

15 Q. But there are quite a raft of
16 solutions to CO(2) if you are willing to pay the cost,
17 correct?

18 A. Raft? Could you define "raft"?

19 Q. A whole bunch.

20 A. Such as?

21 Q. Tree planting. Shifting off coal.

22 A. I think there are a number of
23 solutions. There probably isn't one large technical
24 fix, if that is what you are suggesting. Yes, there
25 are a range of options. You would have to plant a lot

1 of trees.

2 Q. But you could do it.

3 A. I would have to look at the land area
4 available per CO(2) gigagram.

5 MR. SHEPHERD: Mr. Chairman, I was going
6 to go on to a new area. I wonder if that might be an
7 appropriate time to stop for the day.

8 THE CHAIRMAN: We will adjourn until
9 tomorrow morning at 10:00.

10 THE REGISTRAR: Please come to order.
11 The hearing will adjourn until 10 o'clock tomorrow
12 morning.

13 ---Whereupon the hearing was adjourned at 4:56 p.m., to
14 be reconvened on Thursday, June 4, 1992, at 10:00
a.m.

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